

**Report of the  
Commissioners  
of the  
District of  
Columbia**

*1897~1898*

*Vol. 2~3*

**(Washington, DC)**



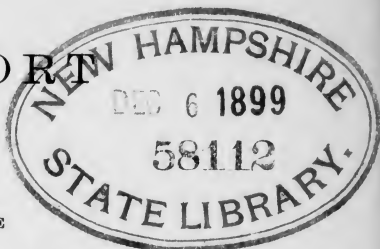
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3d Session. } No. 7.

# REPORT



OF THE

District of Columbia. Commissioners

T: Report

## COMMISSIONERS OF THE DISTRICT OF COLUMBIA

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FOR THE

YEAR ENDED JUNE 30, 1898.

VOL. II.

[ENGINEER DEPARTMENT.]

WASHINGTON:

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REPORT  
OF THE  
OPERATIONS OF THE ENGINEER DEPARTMENT  
OF THE  
DISTRICT OF COLUMBIA

FOR  
THE YEAR ENDING JUNE 30, 1898,

UNDER THE DIRECTION OF

MAJOR W. M. BLACK, CORPS OF ENGINEERS, U. S. A.,  
ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA,  
From July 1, 1897, to May 31, 1898,

AND

CAPTAIN LANSING H. BEACH, CORPS OF ENGINEERS, U. S. A.,  
ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA,  
From June 1, 1898.

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EXTRACT FROM THE REPORT OF THE COMMISSIONERS OF THE DISTRICT  
OF COLUMBIA FOR THE YEAR ENDED JUNE 30, 1898.

OFFICE OF THE COMMISSIONERS  
OF THE DISTRICT OF COLUMBIA,  
*Washington, November 15, 1898.*

The PRESIDENT:

The Commissioners of the District of Columbia herewith submit for the information of Congress, as required by law, their annual report of the official doings of the government of said District for the fiscal year which ended June 30, 1898.

\* \* \* \* \*

OPERATIONS OF THE ENGINEER DEPARTMENT.

The engineer department of the District of Columbia was under the charge of Maj. William M. Black, Corps of Engineers, U. S. A., from July 1, 1897, until May, 1898. He had as assistants Capt. Edward Burr, Corps of Engineers, U. S. A., and Capt. Lansing H. Beach, Corps of Engineers, U. S. A. Captain Burr was relieved from duty with the District of Columbia April 28, 1898, on account of the press of duties incident to the war with Spain, and shortly afterwards was ordered to the front. Major Black was also detailed to duty at the front, and from June 1, 1898, to the end of the fiscal year the department has been in charge of the present Engineer Commissioner, Capt. Lansing H. Beach.

STREET AND ALLEY PAVEMENTS.

Sheet asphalt and asphalt block were the only driveway pavements used upon the city streets during the year. Vitrified block was used almost entirely for alley paving, a few alleys being paved with asphalt block.

Fifty-five thousand six hundred and seventy-two square yards of new concrete pavement were laid, and 22,683 square yards of asphalt block pavement, and 30,393 square yards of old pavement were resurfaced, either by adding a coat of binder and surface material to the old material or removing the old material and laying a new surface with concrete base.

The old tar pavements which were laid a few years ago quite liberally throughout the city are beginning to fail very rapidly, and their general replacement can not be longer postponed. This pavement answers the purpose well during hot weather, but as soon as the temperature becomes low enough to cause the tar to become brittle it goes to pieces with but little more cohesion than so much loose gravel or broken stone. It will probably be necessary for Congress within the next two or three years to make a special appropriation for repaving these streets, or Washington will have to suffer the disgrace of having a good many disreputably paved streets within its limits. No resurfacing was done during the year over any other than tar pavement.

It is found upon further investigation that the statement in the last annual report of the engineer department that asphalt laid over granite block had not given satisfaction in this city is an erroneous one. The annexed table (p. XXII) shows the work that has been done in paving over concrete block, cobble, and other pavements, and the results obtained. The one pavement over granite block which has been unsatisfactory was of an experimental nature, no binder being used, and the wearing surface, with an extra amount of sand, being laid directly upon the blocks, and only  $1\frac{1}{2}$  inches thick. This has worn badly, and a construction of this kind will not be repeated.

The annexed tables (p. IX) show the cost of repairs per square yard for sheet asphalt pavements upon 6-inch and 4-inch bases. No expense for repairs has been incurred for streets paved with asphalt block, although some will have to be repaired during the present season.

The present season has been particularly hot, without any intervening cool spells such as generally occur during the summer at this latitude. The result has been that the sheet asphalt has become thoroughly heated and softened, and has not had an opportunity for weeks at a time of hardening. Another inequality in the asphalt pavement is accentuated when the pavement becomes soft, and as a result of the extreme heat of the present summer the pavements of the city have become bumpy to a degree, it is believed, that has never occurred before.

In the report of last year the statement was made that asphalt block laid during hot weather gave better results than when laid during cold weather, as the block, being somewhat softened, the edges would mat, whereas, when laid in cold weather, the asphalt being brittle, the edges are liable to break or become rounded, and thus cause a somewhat noisier pavement. The manufacturer of the blocks admits that this occurred with the blocks as formerly made with limestone, but claims that by the use of granite or trap rock that breaking of the corners and edges is not so apt to occur. There has not been sufficient time to prove these claims, although experience to date seems to indicate that it is correct.

The prices for asphalt and asphalt block during the past year were: Sheet asphalt, \$1.54 to \$1.75 per square yard; asphalt block, \$1.77 per square yard. For the coming year the prices will be: Sheet asphalt, \$1.76 per square yard; asphalt block, \$1.77 per square yard.

Much complaint is made in the city against the granite-block pavement, and with very good reason. As described in the report of last year, this pavement is exceedingly slippery in dry weather and at all times excessively noisy. There is no questioning the fact that property interests are injuriously affected by this class of pavement. A residence facing a street of this character can not be rented for an amount equal to that freely given for a similar house upon a more smoothly paved street. The same can be said with regard to stores, with the additional fact that trade is to a certain extent diverted from such a street. The requests for relief from storekeepers and property owners throughout the city is general, and it is believed that it is time action should be taken in the matter. One great objection which has existed before to changing the character of these pavements has been that no use was provided in the plan for the blocks removed, and in this manner a large expense would be incurred and the cost of the blocks practically thrown away. Where there were so many streets in the city clamoring for pavement this argument had much force. It is now proposed, however, to utilize the granite blocks in diminishing the cost

of maintaining the county roads in the manner described under that head in this report.

It is earnestly recommended that the policy be inaugurated of removing such an amount of granite-block pavement from the streets of the city as Congress may consider the revenues will warrant, the street from which the blocks are removed to be provided with a sheet-asphalt or asphalt-block pavement. In this manner a great improvement could be made in city streets and county roads, and at a very slight cost over the price of a new pavement.

#### SIDEWALKS.

A greater amount of cement sidewalks was laid during the past year than ever before in the history of the city, the number of square yards being 62,796. The low price—89 cents per square yard—was taken advantage of by many citizens, and as the cost but little exceeded that of brick, a very small amount of the latter pavement was laid.

Cement sidewalks have been laid in the city 5 inches thick and without frost base. On account of the proximity of trees to the sidewalk, it is believed to be inadvisable to permit the use of cinders, and other material for forming a frost base becomes expensive. Experience has not shown that a frost base is necessary at this locality, as the ground generally is of such nature that the water does not remain immediately under the sidewalk, and spells of low temperature are not prolonged or severe. Only one instance is known within the past two years of a walk being thrown by frost, and that one was provided with a frost base, local conditions occurring under the walk, favoring the collection of water, causing the damage.

Several instances have occurred where walks have been broken by expansion during the hot weather of the present season and in this manner the heat appears to cause greater damage to the cement walks than the cold. A new cement sidewalk around the Congressional Library building was subjected to such compression by expansion that a couple of blocks were thrown into the air to a height of several feet, with a noise like the report of a gun, which brought people from the Library and stores in all directions in the vicinity. This is the only case known of explosive action due to expansion, but, as above stated, several instances are known of the gradual breaking up of the walk from this cause. Just what method is best adapted for protection against this trouble has not yet been determined. Flagstone costs much more than cement and does not appear to retain as good a surface. A brick walk is more expensive, unless laid directly upon sand, and when laid in this manner it is apt to lose its smooth surface during periods of alternate freezing and thawing; furthermore, it wears rapidly unless a class of brick is used which brings the cost above that of cement. The price of brick walk is from 75 to 80 cents per square yard, depending upon the distance which the bricks have to be hauled. The price for cement walk during the coming year is 98 cents per square yard without frost base and \$1.18 per square yard with frost base.

#### SUBURBAN STREETS AND COUNTY ROADS.

The District purchased a couple of steam road rollers during the year, and their use has given much satisfaction, as well as produced a general improvement in the roads upon which they were employed. The

District suffers greatly from the lack of good material for a wearing surface for macadamized roads. The gravel obtained from the river, when mixed with a little binder, gives an excellent result for a short while, but the material is not sufficiently hard to have good wearing qualities, and it is necessary to renew the surface very frequently if the road is kept in proper condition. Negotiations are now under way to secure a proper quality of trap rock, and it is hoped that if this material can be secured the work done upon the county roads will be more durable, and that considerable saving in cost of maintenance will result.

The appropriation for the coming fiscal year has been increased by Congress from \$40,000 to \$50,000, but even this larger sum is inadequate to secure results which should be obtained. There are 207 miles of suburban streets and county roads to be cared for from this appropriation, leaving the amount only \$241.54 per mile of road.

Several of the county roads—Seventh street, Bennings road, Bladensburg road, Nichols avenue, and, to a large extent, Canal road—have such a large traffic over them that macadam seems to be insufficient to stand the wear to which the road is subjected. It is recommended that the policy be inaugurated by Congress of taking granite blocks from the streets within the city and placing them upon the county roads. The roadway of these highways need not be over 30 feet wide, and if the granite block were used to pave the two outside thirds of the roadway—that is, a 10-foot strip on each side—it is believed that this portion of the road would be practically removed from the cost of maintenance. A 10-foot strip of asphalt or asphalt block laid down the middle third of the road would give a smooth driveway, and the cost of maintaining this third would be no greater per square yard than the cost of maintaining the same amount of macadam roadway. The cost of the construction of a roadway of this nature is estimated to be \$5 per linear foot, and the cost of sprinkling would also be saved. Take the Bladensburg road, for example: The cost of repairs has been 3.2 cents per square yard, and the cost of sprinkling 2 cents per square yard. If the roadway were constructed in the manner described, the cost of repairs would be nothing for five years, after which it would be about 3.2 cents per square yard per year; or, reducing it to a total for the road, the cost of repairs may be estimated to amount to \$1,452.80 per year; sprinkling, \$908 per year; total, \$2,360.80 per year; while the cost of maintenance under the construction proposed after the guarantee period of five years expired would probably be about \$484.27 per year.

The organic act providing for the present form of government of the District of Columbia states that all work costing over \$1,000 shall be done by contract, and it has been the interpretation of the office that the macadamizing of streets or county roads, if the cost of doing the work exceeded that amount, must be done by contract instead of by hired labor. The result has been far from satisfactory. None of the contractors who have done work for the District in recent years upon the county roads has possessed a road roller, so that the roads as constructed by them have lacked a proper degree of compaction for best construction. Furthermore, work done under contract requires under the law a five-year guarantee from the contractor, it being impossible during the guarantee period for the District to spend any money for repairs. The proper maintenance of a macadamized road is a matter of constant attention and repair. This it has been found impossible to obtain from the contractors, with the result that the roads frequently get in bad condition before the contractor can be brought to do anything upon them, and sometimes it is impossible to secure the results

desired, the amount retained under the contract being insufficient to do the work. Connecticut avenue extended is a notable example of this. Owing to these circumstances the policy has been inaugurated by the office during the past year of doing the grading and purchasing the material under contract, the stone being laid by District employees and compacted by the District road roller. Much better results have been secured in this manner, and as the cost of labor seldom runs to a thousand dollars, even upon the larger works, it is believed that the law is fully carried out. This feature is referred to in the report of Mr. C. B. Hunt, computing engineer (p. 3).

#### BRIDGES.

The appropriation for the ordinary construction and repairs of bridges has been for the past year and is for the coming year \$15,000, which is too small to serve the purposes for which it is intended.

The Navy-Yard Bridge is entirely inadequate to properly serve the travel which is required to pass over it. It should be replaced at an early date by a modern structure. Estimates for this work have been submitted to Congress for several years, but so far no results have been obtained.

#### STREET RAILWAYS.

The Brown underground electric system upon the Capital Railway Company's line on Eleventh and M streets SE. is still in an experimental stage, the company having changed the details of the contact boxes, but the last form adopted has been so recently introduced that its permanency is not assured.

Congress has authorized the reorganization of the Eckington and Soldiers' Home Railway Company and certain of its connecting lines, with the proviso that the portion in the city shall be converted into an underground system similar to that in use on the Metropolitan Railroad. It is hoped that this work will be promptly commenced, as the section of the city which depends upon this line for transit facilities is now suffering greatly for proper means of conveyance to and from the center of the city.

The power house which operated the cable of the Pennsylvania avenue and Fourteenth street lines of the Capital Traction Company was destroyed by fire September 29, 1897, and advantage was taken of this misfortune to change the method of propulsion from cable to underground electric, similar to the system in use on the Metropolitan Railroad. Horses were used to draw the cars during the period of changing the conduits to conform to the new system. After this work was done the Seventh street cable line, which was operated from another power house, was changed to the underground electric system without interfering with the operation of the cars, no temporary tracks whatever being used while the change was being made.

#### SEWERS.

The details of work done by the sewer department are shown in the report of the superintendent of sewers, Mr. D. E. McComb (p. 84).

Good progress has been made on the Tiber Creek and New Jersey avenue intercepting sewer, and appropriations have been made by Congress which fully enable the Commissioners to make contract for building this sewer to the point where it will intercept the present

Tiber Creek sewer. Appropriation has also been made for preparing plans for the pumping station, and it is hoped that rapid progress can henceforward be made on the sewage-disposal system. The necessity for the early completion of this system has been so fully told in former reports that it is believed unnecessary to repeat here the statements there made.

The question of doing away with the James Creek Canal has been agitated by the citizens of southeast Washington. This is a measure which should be carried out at the earliest possible moment. The only economical way of doing it, however, is believed to be in the prompt execution of the sewage-disposal works. Any other method of attempted relief would be only temporary and would be unnecessary if the sewage-disposal system is to be completed. An estimate has been made of the cost of constructing so much of the sewage-disposal system as will permit of the abolishment of this canal, which estimate is appended hereto (p. XXI).

The recommendation is again made that authority be secured, if possible, in cases where work is done under the continuous contract system, to accept a bond from the contractor equal to each season's work separately, instead of a bond equal to the entire amount of the contract. It is believed that considerable saving to the District would result if this were done, as contractors will thus not be compelled to carry a heavy bond for several years when only small appropriations are made for each year's work. The District invariably has to pay the cost of carrying the bond.

#### PLUMBING.

The manner in which the work of this department is appreciated by the public is shown in the increased demand by citizens for the services of the office. This is distinctly shown in the report of the inspector of plumbing (p. 115), to which attention is invited.

The act recently passed by Congress establishing a plumbing board and making it unlawful for any person not a licensed plumber to engage in the plumbing business will do much toward preventing improper and careless work being done by irresponsible parties and will operate as a strong safeguard for the protection of occupants of dwellings throughout the city.

#### ASPHALT AND CEMENTS.

The details of the work done in this department are set forth in the report of Mr. A. W. Dow, inspector of asphalt and cements, to which attention is invited (p. 120).

#### PROPERTY.

This office was under the charge of Mr. L. T. Boiseau from the beginning of the fiscal year until June 16, 1898, when he left to enter the Army for service at the front as an officer of the First District of Columbia Volunteers. Since that date it has been in charge of Mr. C. T. Shoemaker.

#### WATER DEPARTMENT.

The condition of the water department, as will be seen from the report of the superintendent, Mr. W. A. McFarland, is much the same as it was during the preceding year. The supply system still suffers greatly



from waste, and attention is invited to the report of Mr. McFarland and the report of Mr. Green concerning the detection of this waste by means of a Deacon meter, and the amount of water wasted in the few instances mentioned. The case can not be better stated than has already been done by Captain Burr in his report of last year, and by Mr. McFarland in his report for this year, for which see page 134. Attention is respectfully invited to them, and the statements therein are fully approved by the Commissioners.

#### STREET LIGHTING.

The details of street lighting are stated in the accompanying report of Mr. W. C. Allen, inspector of electric lighting (p. 156).

The streets of Washington are extremely difficult to light satisfactorily during months when the trees are in leaf on account of the dense foliage, which prevents the light being thrown to any considerable distance. The electric lights are all provided with long arms reaching out into the street as far as consistent with safety, but even this is not satisfactory. The lights are of a thousand candlepower, which give a strong illumination, so strong in fact that it is the cause of constant complaint from the occupants of houses in close proximity, while at points between lamps the light is frequently so intercepted by the foliage as to render the lighting of the entire street very unsatisfactory. While the requirement of lamps of a thousand candlepower has heretofore been insisted on by Congress, it is believed that lights of less power placed closer together would give a much more satisfactory service, and as the cost of each individual light would be less than that of those now maintained, it is believed that no greater cost to the District would ensue.

The present law does not require the lamps to be lighted until forty-five minutes after sunset. This is believed to be too great an interval. Electric lights have been, until recently, used almost entirely upon the business streets, and the lights from stores have provided some illumination until the street lamps were lighted. With the increase in the number of electric lights and their establishment upon residence streets provided with heavy shade trees, it has been found that this service is entirely inadequate. The streets become inconveniently dark long before forty-five minutes after sunset, and upon cloudy evenings many of them well provided with shade trees become almost dangerous from the dense darkness. A schedule causing the lights to be started at fifteen minutes after sunset could, it is believed, be adopted without increased expense and to the great advantage of the public.

Congress has made an appropriation for experimental lighting, and experiments in this line will be conducted during the coming year to see whether it will be possible to provide a light between the gas lamp and the intensity of the electric light, which will do away with many of the inconveniences now existing.

#### BUILDING AND BUILDING INSPECTION.

Details of the work done in the office of the inspector of buildings will be found in the report of Mr. John B. Brady (p. 187). In this connection it should be stated that a marked improvement in the appearance of District buildings has been obtained by the employment of private architects to prepare the plans and specifications instead of having them drawn in the office of the inspector of buildings. That

official and his assistants have been and are so overcrowded with work that it is absolutely impossible for them to give the necessary time and attention to the preparation of detail plans to secure the best architectural features.

The Commissioners would renew their recommendation that appropriations be made for a definite number of schoolhouses, engine houses, or other municipal buildings, in an aggregate sum, leaving the amount to be allotted for each site and building to the discretion of the Commissioners. It is believed that in this way more favorable results can be secured.

#### SURVEYOR.

The work of this office is detailed in the appended report of Mr. W. P. Richards, surveyor (p. 195). The office was until May 18, 1898, under the charge of Mr. H. B. Looker, who resigned his position to enter the Army, commanding a company in the First District of Columbia Volunteers.

#### PARKING COMMISSION.

The work done by the parking commission is shown in the report, appended hereto, of Mr. Trueman Lanham, superintendent of parking (see p. 197).

The appropriations for several years past have been insufficient to keep in proper condition the trees in the various sections of the city, and which form one of the principal beauties of the national capital. The use of shade trees to the extent developed here, and the judicious care and control over them, is believed not to be equalled in any other city of the country, and the results are most gratifying. Many of the places of the 1,400 trees destroyed in the storm of September 29, 1896, still remain vacant, leaving ugly gaps in the rows, which should be filled at as early a date as possible in order to secure good results. It is earnestly hoped that an increased appropriation for this purpose can be obtained at the next session of Congress.

#### HIGHWAY EXTENSION PLANS.

The work done in this department is stated in detail in the appended report of Mr. W. P. Richards, engineer in charge (p. 200).

The highway act of 1893 has recently been amended by Congress so as to authorize a change in the plan of streets in the section between Rock Creek and the Soldiers' Home, and removing most of the features of the original act which were the cause of complaint of so many citizens of the District. It is believed that street extensions under the amended act will be generally satisfactory.

In conclusion, it is deemed only fitting to acknowledge the good work of the assistants and of the clerical force of the various departments of the office, who have not spared themselves in carrying out their duties to the best of their ability.

Very respectfully,

JOHN B. WIGHT,  
JOHN W. ROSS,  
LANSING H. BEACH,  
*Commissioners of the District of Columbia.*

## Asphalt pavement on 4-inch base.

| Street.            | From—                 | To—           | Price<br>per<br>yard. | Year<br>laid. | Square<br>yards. | Original<br>cost. | Cost of repairs per square yard per year after<br>(date of laying. |      |      |      |       | Contractor. |
|--------------------|-----------------------|---------------|-----------------------|---------------|------------------|-------------------|--------------------------------------------------------------------|------|------|------|-------|-------------|
|                    |                       |               |                       |               |                  |                   | 6.                                                                 | 7.   | 8.   | 9.   | 10.   |             |
| A. NE              | 4th                   | 7th           | \$1.98                | 1887          | 4,205.84         | \$10,610.08       | 0                                                                  | .024 | .018 | .077 | .026  | Barber.     |
| B. NE              | 6th                   | Mass. avenue. | 1.98                  | 1887          | 2,250.24         | 5,223.33          | .016                                                               | 0    | 0    | .037 | .04   | Do.         |
| B. SE              | 5th                   | N. C. avenue  | 1.99                  | 1887          | 3,154.16         | 7,822.97          | 0                                                                  | .015 | .06  | .122 | .149  | Cranford.   |
| C. SW              | 4½                    | 6th           | 1.97                  | 1887          | 2,273.06         | 7,915.61          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| C. SE              | 1st.                  | N. J. avenue. | 1.99                  | 1887          | 5,941.07         | 18,085.95         | .037                                                               | .108 | .158 | .027 | 2.419 | Do.         |
| D. NE              | 1st.                  | Mass. avenue. | 2.00                  | 1889          | 4,918.61         | 14,706.19         | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| D. SW              | Del. avenue.          | Mass. avenue. | 2.00                  | 1892          | 4,117.38         | 11,534.67         | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| D. SW              | 3d                    | 4½            | 1.99                  | 1887          | 2,362.61         | 7,068.47          | 0                                                                  | .033 | .112 | .108 | .045  | Do.         |
| D. SE              | 1st.                  | N. J. avenue. | 2.00                  | 1889          | 4,329.19         | 12,455.88         | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| E. NE              | S. Capitol.           | N. J. avenue. | 2.00                  | 1892          | 3,274.02         | 7,595.19          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| E. NE              | N. Capitol            | 4½            | 1.98                  | 1878          | 2,484.01         | (a)               | .003                                                               | .015 | .013 | .05  | .04   | Barber.     |
| E. SW              | 3d                    | 4½            | 1.97                  | 1886          | 2,370.59         | 5,785.43          | 0                                                                  | 0    | 0    | 0    | 0     | Cranford.   |
| E. SW              | 3d                    | Va. avenue.   | 1.99                  | 1887          | 1,580.45         | 4,950.74          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| E. SW              | 1st.                  | 13th          | 2.00                  | 1890          | 3,104.11         | 7,058.70          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| E. SE              | Pa. avenue.           | 1893-94       | { 1.90                |               | 3,466.26         | 9,838.86          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| E. SE              | Intersection of 13th. | N. Capitol.   | 1.90                  | 1894          | 619.91           | 1,649.76          | 0                                                                  | .02  | .033 | .119 | .064  | Barber.     |
| F. NW              | N. Capitol            | 3d            | 1.98                  | 1887          | 2,982.20         | 8,743.69          | 0                                                                  | .026 | .051 | .046 | 0     | Cranford.   |
| F. NW              | N. J. avenue.         | N. Capitol.   | 2.00                  | 1888          | 8,839.19         | 19,706.89         | 0                                                                  | .012 | .08  | .64  | .057  | Barber.     |
| G. NE              | N. Capitol.           | 1st           | 1.98                  | 1887          | 3,802.29         | 10,809.12         | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| G. SW              | 3d                    | 4½            | 2.00                  | 1888          | 2,308.28         | 7,420.32          | 0                                                                  | 0    | 0    | 0    | 0     | Cranford.   |
| H. NW              | 4th                   | 7th           | 1.97                  | 1887          | 6,381.10         | 19,044.30         | .007                                                               | .009 | .065 | 0    | 0     | Do.         |
| H. NE, south side. | 1st                   | 15th          | 2.00                  | 1890          | 12,590.70        | 40,119.65         | 0                                                                  | .001 | .015 | .013 | 0     | Do.         |
| H. SW              | 4½                    | 3d            | 1.99                  | 1887          | 2,407.37         | 6,947.54          | .181                                                               | .10  | .072 | 0    | 2.443 | Barber.     |
| H. SW              | 1st.                  | 3d            | 2.00                  | 1889          | 4,111.00         | 12,254.88         | 0                                                                  | 0    | .015 | 0    | 0     | Cranford.   |
| I. NE              | N. Capitol.           | 3d            | 2.00                  | 1889          | 3,284.50         | 8,888.95          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| K. NE              | 1st.                  | 1st           | 2.00                  | 1889          | 4,497.86         | 13,512.79         | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| L. NW              | 26th                  | 27th          | 2.00                  | 1889          | 1,178.67         | 3,359.95          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| L. NW              | N. J. avenue.         | N. Capitol.   | 2.00                  | 1890          | 4,643.35         | 13,997.49         | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| M. NW              | 1st.                  | 1st           | 2.00                  | 1890          | 2,507.37         | 6,710.58          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| N. NW              | 5th                   | N. J. avenue. | 2.00                  | 1890          | 331.43           | 9,140.47          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| N. NW              | 21st.                 | 22d           | 2.00                  | 1892          | 2,081.21         | 6,366.15          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| N. NW              | 35th                  | 36th          | 2.00                  | 1891          | 1,080.61         | 4,609.48          | 0                                                                  | 0    | 0    | 0    | 0     | Do.         |
| O. NW              | 20th                  | 21st          | 1.97                  | 1887          | 2,010.97         | 5,131.08          | 0                                                                  | .005 | 0    | 0    | .008  | Barber.     |
| O. NW              | 35th                  | College gate. | 2.00                  | 1888          | 2,397.74         | 8,278.94          | 0                                                                  | 0    | 0    | .05  | 0     | Cranford.   |
| O. NW              | 21st.                 | 22d           | 2.00                  | 1889          | 2,398.13         | 6,965.56          | .001                                                               | 0    | 0    | 0    | 0     | Barber.     |

a Was replaced by 6-inch hydraulic base in 1893.

## Asphalt pavement on 4-inch base—Continued.

| Street. | From—           | To—              | Price<br>per<br>yard. | Year.<br>laid. | Square<br>yards. | Original<br>cost. | Cost of repairs per square yard per year after<br>date of laying. |       |      |      |      | Contractor.    |
|---------|-----------------|------------------|-----------------------|----------------|------------------|-------------------|-------------------------------------------------------------------|-------|------|------|------|----------------|
|         |                 |                  |                       |                |                  |                   | 6.                                                                | 7.    | 8.   | 9.   | 10.  |                |
| Q. NW.  | 28th            | 29th             | \$2.00                | 1890           | 859.85           | \$2,327.89        | 0                                                                 | 0     | 0    | 0    | .147 | Barber,<br>Do. |
| Q. NW.  | 30th            | Valley           | 1.98                  | 1887           | 3,943.37         | 11,531.35         | .039                                                              | .06   | .014 | .828 | .10  | Cranford.      |
| Q. NW.  | 6th             | R. I. avenue.    | 1.98                  | 1887           | 4,738.50         | 13,030.01         | 0                                                                 | .0004 | .031 | .644 |      | Do.            |
| Q. NW.  | 17th            | N. J. avenue.    | 2.00                  | 1888           | 4,904.03         | 10,743.76         | 0                                                                 |       | .002 |      |      | Do.            |
| Q. NW.  | 5th             | N. J. avenue.    | 2.00                  | 1888           | 2,030.67         | 4,869.73          | 0                                                                 | 0     | 0    | 0    | .063 | Barber.        |
| Q. NW.  | 23d             | Valley           | 1.98                  | 1887           | 1,066.70         | 3,884.30          | 0                                                                 | 0     | .011 | 0    | .013 | Cranford.      |
| Q. NW.  | 21st            | 22d              | 1.97                  | 1886           | 2,541.39         | 5,631.17          | 0                                                                 | 0     | 0    | 0    |      | Barber.        |
| Q. NW.  | 25th            | 30th             | 2.00                  | 1889           | 2,000.00         | 6,607.67          | 0                                                                 | 0     | 0    | 0    |      | Cranford.      |
| Q. NW.  | Vt. avenue.     | R. I. avenue.    | 2.00                  | 1889           | 2,453.44         | 6,077.14          | 0                                                                 | 0     | 0    | 0    |      | Do.            |
| Q. NW.  | 3d              | 6th              | 2.00                  | 1890           | 1,812.10         | 6,517.51          | 0                                                                 | 0     |      |      |      | Do.            |
| Q. NW.  | 5th             | 6th              | 2.00                  | 1890           | 822.87           | 2,088.31          | 0                                                                 | 0     |      |      |      | Do.            |
| Q. NW.  | 32d             | 35th             | 2.00                  | 1891           | 4,001.98         | 14,136.01         | 0                                                                 | 0     | 0    | .063 | .057 | Barber.        |
| R. NW.  | 21st            | Comm. avenue     | 1.98                  | 1887           | 1,411.03         | 3,382.84          | 0                                                                 | 0     | .246 | 0    | 0    | Cranford.      |
| R. NW.  | 7th             | 9th              | 2.00                  | 1888           | 1,601.82         | 4,061.99          | 0                                                                 | 0     |      |      |      | Do.            |
| R. NW.  | 16th            | N. H. avenue.    | 2.00                  | 1890           | 3,918.20         | 14,872.75         | 0                                                                 | 0     |      |      |      | Barber.        |
| R. NW.  | Eia. avenue.    | Lincoln          | 2.25                  | 1890           | 3,050.88         | 6,101.76          | 0                                                                 | 0     |      |      |      | Cranford.      |
| R. NW.  | Lincoln avenue. | B. & O. R. R. b. | 2.00                  | 1889           | 2,880.69         | 8,733.98          | 0                                                                 | 0     | .027 |      |      | Do.            |
| S. NW.  | 16th            | N. H. avenue.    | 2.00                  | 1890           | 1,076.85         | 3,646.57          | 0                                                                 | 0     |      |      |      | Barber.        |
| S. NW.  | 20th            | Comm. avenue.    | 2.00                  | 1889           | 5,058.46         | 14,526.02         | 0                                                                 | .012  | .017 |      |      | Cranford.      |
| S. NW.  | 7th             | 11th             | 2.00                  | 1889           | 5,058.46         | 14,526.02         | 0                                                                 |       |      |      |      | Barber.        |
| T. NW.  | 10th            | 14th             | 2.00                  | 1892           | 5,256.35         | 16,805.16         |                                                                   |       |      |      |      | Cranford.      |
| T. NW.  | 31st            | 32d              | 1.94                  | 1895           | 3,738.57         | 11,415.38         |                                                                   |       |      |      |      | Barber.        |
| U. NW.  | 32d             | 35th             | 1.93                  | 1894           | 2,371.13         | 8,291.82          |                                                                   |       |      |      |      | Cranford.      |
| V. NW.  | 13th            | 15th             | 1.53                  | 1894           | 1,842.32         |                   |                                                                   |       |      |      |      | Do.            |
| 1st. NW | I.              | K                | 2.00                  | 1890           | 1,190.82         | 3,028.37          | 0                                                                 | 0     |      |      |      | Do.            |
| 1st. NW | S               | W                | 1.94                  | 1895           | 7,385.38         |                   |                                                                   |       |      |      |      | Do.            |
| 1st. NE | C               | F                | 2.00                  | 1891           | 5,616.24         | 13,495.46         | 0                                                                 |       |      |      |      | Do.            |
| 2d. NE  | F               | H                | 2.00                  | 1891           | 3,884.92         | 9,595.23          | 0                                                                 |       |      |      |      | Do.            |
| 2d. SW  | C               | Va. avenue       | 2.00                  | 1890           | 3,178.69         | 12,234.64         | .009                                                              | .019  |      |      |      | Do.            |
| 2d. NE  | T               | 2d. NE           | 2.00                  | 1890           | 4,213.24         | 8,701.68          | 0                                                                 | 0     |      |      |      | Do.            |
| 2d. NE  | C               | F                | 2.00                  | 1890           | 4,313.92         | 10,890.00         | 0                                                                 | 0     |      |      |      | Do.            |
| 4th. NW | Pa. avenue.     | Pa. avenue.      | 1.97                  | 1886           | 2,286.83         | 6,298.92          | 0                                                                 | 0     | .041 | .074 | .16  | Do.            |
| 4th. NW | Mo. avenue      | Mo. avenue       | 2.00                  | 1890           | 4,833.16         | 18,978.48         | .047                                                              | .017  |      |      |      | Do.            |
| 5th. NW | O               | Q                | 2.00                  | 1889           | 3,122.98         | 7,764.19          | 0                                                                 | .009  |      |      |      | Barber.        |
| 5th. NW | Q               | Pa. avenue.      | 2.00                  | 1889           | 4,436.13         | 11,654.27         | 0                                                                 | .021  | .006 |      |      | Cranford.      |
| 5th. SE | C               | E                | 1.93                  | 1894           | 2,566.97         | 5,678.59          |                                                                   |       |      |      |      | Barber.        |

b Laid for and at expense Geo. Truesdell.

|              |              |                                          |      |      |          |           |      |      |      |      |      |           |
|--------------|--------------|------------------------------------------|------|------|----------|-----------|------|------|------|------|------|-----------|
| 6th NW       | G            | N. Y. avenue                             | 1.97 | 1887 | 6,896.22 | 17,992.05 | .009 | .01  | .631 | .093 | .076 | Cranford. |
| 8th NW       | R            | S                                        | 1.98 | 1887 | 2,065.20 | 5,226.57  | .001 | .004 | .011 | .07  | .137 | Do.       |
| 8th NW       | S            | Fla. avenue                              | 2.00 | 1888 | 3,023.84 | 8,357.31  | 0    | 0    | 0    | 0    | 0    | Barber.   |
| 8th SE       | B            | D                                        | 1.93 | 1894 | 4,764.65 | 10,493.37 | 0    | 0    | 0    | 0    | 0    | Do.       |
| 9th NE       | H            | H                                        | 2.00 | 1891 | 5,781.15 | 17,962.48 | 0    | 0    | 0    | 0    | 0    | Do.       |
| 9th NE       | H            | Mass. avenue                             | 2.00 | 1892 | 2,060.89 | 6,813.56  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 10th NE      | G            | E. Capitol                               | 2.00 | 1892 | 1,992.40 | 6,639.55  | .004 | .034 | 0    | .204 | .016 | Cranford. |
| 10th NW      | R            | S                                        | 1.95 | 1887 | 1,992.40 | 6,639.55  | .004 | .034 | 0    | .204 | .016 | Do.       |
| 12th NW      | R            | S                                        | 2.00 | 1888 | 1,798.11 | 8,176.88  | 0    | 0    | 0    | .008 | 0    | Do.       |
| 12th NW      | R            | Vt. avenue                               | 1.98 | 1887 | 2,304.00 | 8,119.88  | .001 | .018 | .018 | .045 | .068 | Do.       |
| 12th NW      | S            | V                                        | 2.00 | 1889 | 5,377.15 | 18,872.61 | 0    | 0    | 0    | 0    | 0    | Do.       |
| 13th NW      | S            | Intersection of B.                       | 2.00 | 1869 | 775.21   | 1,705.58  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 13th NW      | S            | Emerson                                  | 2.00 | 1892 | 1,725.22 | 4,401.44  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 14th NW      | B            | Pa. avenue                               | 1.97 | 1887 | 8,851.74 | 22,511.87 | .095 | .501 | .073 | .132 | .016 | Barber.   |
| 14th NW      | B            | Yale                                     | 2.00 | 1869 | 7,365.00 | 23,505.13 | .008 | .005 | .003 | 0    | 0    | Cranford. |
| 17th NW      | P            | Q                                        | 1.98 | 1887 | 1,765.30 | 5,551.52  | 0    | .013 | .043 | .105 | .081 | Barber.   |
| 17th NW      | Q            | R                                        | 2.00 | 1889 | 1,874.24 | 6,154.05  | .061 | .028 | 0    | 0    | 0    | Cranford. |
| 17th NW      | Q            | N. Y. avenue                             | 2.00 | 1889 | 4,847.07 | 12,084.10 | 0    | 0    | 0    | 0    | 0    | Do.       |
| 17th NW      | R            | T                                        | 1.20 | 1889 | 2,946.33 | 10,430.38 | .018 | .017 | 0    | 0    | 0    | Barber.   |
| 18th NW      | P            | Q                                        | 1.98 | 1887 | 1,763.70 | 5,896.88  | 0    | .014 | .022 | .074 | .018 | Cranford. |
| 18th NW      | P            | Fla. avenue and Columbia road (widened). | 2.00 | 1891 | 3,206.32 | 6,412.14  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 18th NW      | P            | Fla. avenue and Columbia road (widened). | 2.00 | 1891 | 4,403.91 | 8,807.82  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 21st NW      | R            | Hillyer                                  | 1.98 | 1887 | 988.15   | 2,708.34  | 0    | .02  | 0    | .145 | .012 | Do.       |
| 22d NW       | R            | Fla. avenue                              | 2.00 | 1890 | 1,483.01 | 5,189.91  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 22d NW       | M            | O                                        | 2.00 | 1890 | 3,894.20 | 4,294.27  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 22d NW       | P            | Mass. avenue                             | 1.94 | 1896 | 2,668.50 | 6,482.82  | 0    | 0    | 0    | 0    | 0    | Barber.   |
| 22d NW       | P            | Mass. avenue                             | 2.00 | 1889 | 1,585.70 | 4,861.67  | .011 | 0    | 0    | 0    | 0    | Cranford. |
| 22d NW       | O            | P                                        | 2.00 | 1896 | 2,127.67 | 4,785.03  | 0    | 0    | 0    | 0    | 0    | Barber.   |
| 25th NW      | Pa. avenue   | R                                        | 2.00 | 1890 | 1,692.67 | 5,071.73  | 0    | 0    | 0    | 0    | 0    | Cranford. |
| 25th NW      | Pa. avenue   | K                                        | 2.00 | 1890 | 1,163.37 | 4,146.22  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 28th NW      | P            | Q                                        | 2.00 | 1890 | 1,474.47 | 3,737.13  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 28th NW      | M            | P                                        | 1.10 | 1894 | 1,550.78 | 3,737.13  | 0    | 0    | 0    | 0    | 0    | Thomas.   |
| 29th NW      | P            | Q                                        | 2.00 | 1890 | 1,261.38 | 3,261.14  | 0    | 0    | 0    | 0    | 0    | Barber.   |
| 30th NW      | P            | Q                                        | 2.00 | 1888 | 1,262.00 | 3,514.69  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 31st NW      | K            | M                                        | 1.98 | 1887 | 1,208.77 | 5,514.39  | 0    | 0    | 0    | 0    | .015 | Do.       |
| 33d NW       | K            | N                                        | 2.00 | 1890 | 1,590.17 | 5,900.23  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 33d NW       | P            | 32d                                      | 2.00 | 1890 | 1,674.58 | 5,764.00  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 34th NW      | M            | 32d                                      | 2.00 | 1890 | 1,638.61 | 4,357.92  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 34th NW      | P            | R                                        | 2.00 | 1891 | 2,264.30 | 7,926.79  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 35th NW      | N            | P                                        | 2.00 | 1891 | 2,109.53 | 7,926.79  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 35th NW      | N            | P                                        | 2.00 | 1887 | 2,929.23 | 8,163.70  | 0    | .004 | 0    | 0    | .03  | Cranford. |
| 35th NW      | P            | Q                                        | 1.97 | 1887 | 1,538.04 | 5,304.95  | 0    | .012 | .033 | 0    | .114 | Barber.   |
| 35th NW      | P            | Prospect                                 | 2.00 | 1890 | 1,017.00 | 3,246.45  | 0    | 0    | 0    | 0    | 0    | Do.       |
| 35th NW      | Q            | N                                        | 2.00 | 1891 | 5,749.20 | 18,563.05 | 0    | .002 | 0    | 0    | 0    | Do.       |
| 36th NW      | P            | Prospect                                 | 2.00 | 1891 | 2,367.64 | 7,994.41  | 0    | 0    | 0    | 0    | 0    | Do.       |
| Mass. avenue | N. J. avenue | N. Capitol                               | 1.98 | 1887 | 5,143.20 | 14,173.99 | 0    | .017 | .039 | .049 | .038 | Do.       |

## Asphalt pavement on 4-inch base—Continued.

| Street.           | From—           | To—                  | Price per yard. | Year laid. | Square yards. | Original cost. | Cost of repairs per square yard per year after date of laying. |      |      |      |      |     | Contractor. |
|-------------------|-----------------|----------------------|-----------------|------------|---------------|----------------|----------------------------------------------------------------|------|------|------|------|-----|-------------|
|                   |                 |                      |                 |            |               |                | 6.                                                             | 7.   | 8.   | 9.   | 10.  | 11. |             |
| N. H. avenue..... | Q               | R                    | 2.00            | 1888       | 4,163.68      | 11,035.95      | 0                                                              | .014 | .002 | .018 |      |     | Cranford.   |
| N. H. avenue..... | R               | T                    | 2.00            | 1889       | 8,808.84      | 22,950.80      | 0                                                              | 0    | 0    |      |      |     | Do.         |
| N. H. avenue..... | T               | V                    | 2.00            | 1889       | 6,835.01      | 22,073.37      | 0                                                              | 0    | 0    |      |      |     | Do.         |
| N. J. avenue..... | M               | Fla. avenue          | 1.99            | 1887       | 18,136.95     | 38,357.64      | .927                                                           | .653 | .504 | .047 | .07  |     | Barber.     |
| N. J. avenue..... | 7th             | N. J. avenue         | 2.00            | 1889       | 9,239.11      | 25,723.28      | 0                                                              | .002 | .006 | 0    |      |     | Cranford.   |
| N. Y. avenue..... | N               | N. J. avenue         | 2.00            | 1890       | 5,603.60      | 13,039.62      | 0                                                              | 0    |      |      |      |     | Do.         |
| N. Y. avenue..... | N               | N. J. avenue         | 2.25            | 1891       | 5,332.80      | 16,807.38      | 0                                                              | .001 | .002 | .005 |      |     | Barber.     |
| Pa. avenue.....   | 8th             | 11th                 | 2.00            | 1888       | 3,400.46      | 11,800.34      | 0                                                              | .007 | .041 | 0    |      |     | Do.         |
| R. J. avenue..... | 5th             | N. J. avenue         | 2.00            | 1888       | 7,312.71      | 3,349.17       | 0                                                              | .007 | .033 | .022 | .027 |     | Do.         |
| N. Capitol.....   | Mass. avenue    | E                    | 2.00            | 1887       | 7,456.80      | 18,853.01      | 0                                                              | .007 | .013 | .035 | .034 |     | Do.         |
| N. Capitol.....   | Mass. avenue    | R                    | 1.98            | 1887       | 8,850.40      | 8,327.67       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| N. Capitol.....   | I               | R                    | 2.00            | 1889       | 2,887.33      | 6,327.67       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Fla. avenue.....  | 7th             | N. J. avenue         | 2.00            | 1888       | 2,067.70      | 18,131.79      | 0                                                              | .007 | .028 | .025 | 0    |     | Do.         |
| Fla. avenue.....  | Intersection of | Conn. avenue.        |                 |            | 2,063.63      | 9,041.75       | 0                                                              | 0    |      |      |      |     | Cranford.   |
| Fla. avenue.....  | N. J. avenue    | 4th                  | 2.00            | 1890       | 3,193.61      | 6,041.75       | 0                                                              | 0    |      |      |      |     | Barber.     |
| Fla. avenue.....  | Q               | N. H. avenue         | 1.94            | 1895       | 2,812.84      | 6,766.80       | 0                                                              | 0    | .028 | .01  |      |     | Cranford.   |
| Fla. avenue.....  | 15th            | N. H. avenue         | 2.00            | 1888       | 4,357.49      | 17,451.15      | 0                                                              | 0    |      |      |      |     | Do.         |
| Fla. avenue.....  | E               | Va. avenue           | 1.94            | 1885       | 4,307.23      |                | 0                                                              | 0    |      |      |      |     | Barber.     |
| Madison.....      | M               | N                    | 2.00            | 1889       | 1,327.52      | 4,619.08       | 0                                                              | 0    |      |      |      |     | Do.         |
| Madison.....      | 17th            | N                    | 2.00            | 1889       | 2,271.31      | 7,121.90       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Madison.....      | 18th            | N                    | 2.00            | 1882       | 1,446.22      | 3,887.15       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Ridgely.....      | R               | 8th                  | 2.00            | 1889       | 2,518.00      | 9,532.92       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Washington.....   | 4th             | 20th                 | 2.00            | 1880       | 2,138.11      | 8,159.25       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Washington.....   | 4th             | N                    | 2.00            | 1889       | 2,860.49      | 7,766.04       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Marion.....       | P               | R                    | 2.00            | 1889       | 1,692.97      | 4,217.93       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| French.....       | 9th             | 10th                 | 2.00            | 1889       | 1,025.77      | 4,894.61       | .018                                                           | 0    | 0    |      |      |     | Do.         |
| Myrtle.....       | N               | N. Capitol           | 2.00            | 1889       | 1,698.79      | 4,578.75       | 0                                                              | 0    | .003 |      |      |     | Cranford.   |
| Kirchman.....     | P               | 15th                 | 2.00            | 1890       | 1,698.79      | 7,325.62       | 0                                                              | 0    | 0    |      |      |     | Do.         |
| Somerset.....     | 14th            | N. Capitol           | 2.00            | 1880       | 1,733.23      | 7,325.62       | 0                                                              | 0    | 0    |      |      |     | Barber.     |
| Pierce.....       | N. Capitol      | N. J. avenue         | 2.00            | 1880       | 5,534.77      | 16,077.63      | 0                                                              | 0    | 0    |      |      |     | Cranford.   |
| Euclid.....       | 14th            | University place     | 2.00            | 1891       | 1,615.76      | 3,800.19       | 0                                                              | 0    |      |      |      |     | Barber.     |
| Emerson.....      | 13th            | University place     | 2.00            | 1892       | 1,611.80      | 4,531.49       |                                                                |      |      |      |      |     | Do.         |
| Ward place.....   | 9th             | N. H. avenue         | 2.00            | 1892       | 1,505.03      | 4,143.32       |                                                                |      |      |      |      |     | Do.         |
| Westminster.....  | 9th             | Westminster          | 2.00            | 1892       | 1,718.80      |                |                                                                |      |      |      |      |     | Do.         |
| Carroll.....      | 1st and 3d      | B and C              | 2.00            | 1892       | 1,415.53      | 6,292.82       |                                                                |      |      |      |      |     | Do.         |
| Hopkins.....      | O and P         | 20th and 21st        | 2.00            | 1892       | 7,48.56       | 3,084.23       |                                                                |      |      |      |      |     | Cranford.   |
| Pine.....         | 15th            | O and P              | 2.00            | 1892       | 1,366.41      | 4,520.93       |                                                                |      |      |      |      |     | Barber.     |
| Pomerooy.....     | 7th             | Frederick's Hospital | 2.00            | 1880       | 2,500.04      | 7,692.04       | 0                                                              | 0    | .02  |      |      |     | Cranford.   |
| Larch.....        | Fla. avenue     | Maple                | 2.00            | 1890       | 1,516.45      | 4,333.56       | 0                                                              | 0    |      |      |      |     | Barber.     |

|                |                 |             |      |      |          |          |       |       |       |       |       |                  |
|----------------|-----------------|-------------|------|------|----------|----------|-------|-------|-------|-------|-------|------------------|
| Maple.....     | Fla avenue..... | Linden..... | 2.00 | 1890 | 3,247.32 | 9,379.56 | 0     | 0     | ..... | ..... | ..... | Do.<br>Cranford. |
| Caroline.....  | 15th.....       | 16th.....   | 2.00 | 1891 | 1,325.05 | 4,082.59 | 0     | ..... | ..... | ..... | ..... | Barber.          |
| Prospect.....  | 33d.....        | 35th.....   | 2.00 | 1890 | 2,918.01 | 7,206.96 | 0     | 0     | ..... | ..... | ..... | Do.              |
| Prospect.....  | 35th.....       | 36th.....   | 2.00 | 1891 | 966.05   | 2,891.90 | .233  | ..... | ..... | ..... | ..... | Do.              |
| Clifton.....   | 14th.....       | 15th.....   | 2.00 | 1892 | 2,220.96 | 5,732.50 | ..... | ..... | ..... | ..... | ..... | Do.              |
| Dumbarton..... | 28th.....       | 32d.....    | 1.98 | 1887 | 3,608.80 | .....    | 0     | ..... | .003  | 0     | .015  | Do.              |

## XIV OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Asphalt pavements*

| Street. | From—        | To—               | Price per yard. | Year laid. | Square yards. | Original cost. |
|---------|--------------|-------------------|-----------------|------------|---------------|----------------|
| A, NE   | 1st          | 2d                | \$1.84          | 1880       | 2,787.64      | \$5,228.03     |
| A, NE   | 2d           | 4th               | 2.25            | 1884       | 2,972.13      | 7,025.84       |
| A, SE   | 2d           | 3d                | 2.09            | 1881       | 1,734.35      | 3,713.92       |
| B, NE   | 2d           | 4th               | 2.25            | 1884       | 2,555.62      | 6,024.67       |
| B, NE   | 4th          | 6th               | 2.25            | 1885       | 2,015.60      | 5,437.60       |
| B, SE   | 2d           | 5th               | 2.09            | 1881       | 3,809.72      | 8,261.36       |
| C, NW   | 3d           | 4th               | 2.20            | 1882       | 2,054.09      | 4,732.45       |
| C, NW   | 4th          | 7th               | 2.25            | 1885       | 4,603.62      | 15,902.77      |
| D, NW   | 17th         | 18th              | 2.25            | 1892       | 2,788.09      | 10,281.59      |
| D, SE   | 2d           | 3d                | 2.27            | 1882       | 1,453.74      | 3,313.13       |
| D, SW   | 1st          | 3d                | 2.25            | 1891       | 2,905.05      | 10,721.34      |
| E, NW   | N. J. avenue | 4th               | 1.47            | 1879       | 4,922.00      | 7,366.83       |
| E, NW   | 5th          | 11th              | 1.75            | 1878       | 9,323.00      | 16,535.40      |
| E, SW   | 4th          | 7th               | 1.85            | 1880       | 4,285.66      | 9,672.43       |
| E, SW   | S. Capitol   | 1st               | 2.00            | 1890       | 3,104.11      | 7,058.70       |
| E, SW   | 7th          | 13th              | 2.25            | 1892       | 6,867.43      | 19,367.21      |
| F, NW   | 1st          | 4th               | 1.47            | 1879       | 4,382.00      | 6,453.63       |
| F, NW   | 5th          | 7th               | 1.78            | 1878       | 2,359.00      | 4,198.84       |
| F, NW   | 7th          | 9th               | 3.25            | 1877       | 1,913.00      | 6,217.18       |
| F, NW   | 17th         | 18th              | 1.85            | 1881       | 2,835.67      | 5,372.23       |
| H, NE   | N. Capitol   | 1st               | 2.26            | 1883       | 4,189.61      | 9,697.20       |
| H, NE   | 1st          | 15th (north side) | 2.30            | 1883       | 14,123.90     | 31,551.26      |
| H, NW   | 14th         | 15th              | 2.25            | 1884       | 1,734.83      | 5,982.50       |
| H, NW   | 3d           | 4th               | 2.26            | 1883       | 784.06        | 1,873.47       |
| H, NW   | 16th         | 19th              | 2.25            | 1884       | 5,451.20      | 18,607.89      |
| H, SW   | 4th          | 7th               | 1.85            | 1881       | 4,326.67      | 10,128.06      |
| H, SW   | 7th          | 9th               | 2.23            | 1883       | 2,138.04      | 6,126.25       |
| I, NW   | 13th         | 15th              | 4.50            | 1874       | 4,632.00      | 19,636.00      |
| I, NW   | 9th          | 10th              | 1.47            | 1879       | 2,090.00      | 4,969.69       |
| I, NW   | 17th         | 18th              | 1.85            | 1880       | 2,672.28      | 7,431.21       |
| I, NW   | 2d           | 5th               | 2.25            | 1884       | 5,083.50      | 17,694.25      |
| I, NW   | 8th          | 9th               | 2.25            | 1885       | 755.41        | 2,412.71       |
| I, NW   | 5th          | 8th               | 1.47            | 1880       | 4,210.00      | 6,351.84       |
| I, NW   | 10th         | 11th              | 2.25            | 1886       | 713.59        | 2,285.10       |
| I, NW   | 18th         | Pa. avenue        | 2.25            | 1886       | 5,327.27      | 13,331.50      |
| I, NW   | 23d          | do                | 1.20            | 1891       | 6,295.58      | 17,192.14      |
| K, NW   | 18th         | 2d                | 1.83            | 1880       | 11,670.78     | 21,357.53      |
| L, NW   | 6th          | 8th               | 2.27            | 1883       | 2,645.38      | 6,017.38       |
| L, NW   | 20th         | 25th              | 2.26            | 1883       | 8,141.05      | 18,662.13      |
| L, NW   | Pa. avenue   | 26th              | 2.25            | 1884       | 483.11        | 1,088.90       |
| M, NW   | N. J. avenue | 6th               | 1.85            | 1880       | 5,564.01      | 15,157.92      |
| M, NW   | 6th          | 14th              | 1.75            | 1879       | 13,147.00     | 32,199.07      |
| M, NW   | 14th         | 16th              | 2.08            | 1881       | 4,572.98      | 9,783.35       |
| M, NW   | 18th         | N. H. avenue      | 1.47            | 1879       | 6,084.00      | 9,143.27       |
| M, NW   | 26th         | 26th              | 2.26            | 1882       | 9,170.96      | 21,188.29      |
| N, NW   | 9th          | 14th              | 1.84            | 1881       | 6,802.00      | 10,218.80      |
| N, NW   | 14th         | Scott circle      | 1.84            | 1881       | 3,248.86      | 6,235.75       |
| N, NW   | 5th          | 9th               | 2.28            | 1883       | 4,454.01      | 10,159.92      |
| N, NW   | 32d          | 35th              | 1.84            | 1880       | 5,689.29      | 10,759.59      |
| N, NW   | 22d          | 24th              | 2.25            | 1892       | 2,196.28      | 9,633.44       |
| O, NW   | Vt. avenue   | 13th              | 2.00            | 1883       | 481.28        | 1,079.62       |
| O, NW   | 16th         | 17th              | 2.29            | 1883       | 1,697.00      | 3,886.13       |
| O, NW   | 29th         | 32d               | 2.25            | 1885       | 4,829.10      | 11,452.95      |
| P, NW   | 9th          | 15th              | 2.29            | 1883       | 8,156.46      | 19,007.83      |
| P, NW   | N. J. avenue | 9th               | 2.25            | 1884       | 5,165.64      | 12,397.40      |
| P, NW   | 15th         | 18th              | 2.25            | 1884       | 8,075.65      | 18,220.59      |
| P, NW   | 4th          | N. Capitol        | 2.00            | 1891       | 7,134.71      | 23,995.31      |
| Q, NW   | Oreg. avenue | 14th              | 2.25            | 1883       | 2,806.02      | 6,451.79       |
| R, NW   | 9th          | 14th              | 2.25            | 1884       | 7,639.81      | 17,248.66      |
| R, NW   | 7th          | Fla. avenue       | 2.25            | 1890       | 7,551.28      | 29,712.92      |
| R, NW   | 4th          | Brentwood road    | 2.25            | 1890       | 2,321.00      | 6,993.50       |
| R, NW   | N. H. avenue | 20th              | 2.25            | 1891       | 3,497.55      | 12,258.25      |
| R, NW   | 21st         | Fla. avenue       | 2.25            | 1892       | 734.70        | 2,248.24       |
| R, NW   | 9th          | 10th              | 2.25            | 1891       | 1,765.92      | 5,170.15       |
| U, NW   | 14th         | 16th              | 2.25            | 1891       | 3,301.11      | 8,455.94       |
| U, NW   | 9th          | 10th              | 2.25            | 1891       | 3,310.33      | 12,762.28      |
| 1st, NW | Md. avenue   | Md. avenue        | 2.24            | 1883       | 4,539.62      | 10,460.01      |
| 1st, NE | B.           | C.                | 1.85            | 1881       | 1,986.55      | 3,736.08       |
| 2d, NW  | Ind. avenue  | Pa. avenue        | 2.08            | 1881       | 10,451.54     | 22,534.42      |
| 3d, SE  | Md. avenue   | D.                | 2.09            | 1881       | 4,751.01      | 10,589.39      |
| 3d, SE  | Pa. avenue   | N. Y. avenue      | 2.27            | 1882       | 4,906.14      | 11,371.97      |
| 3d, NW  | L.           | F.                | 1.78            | 1879       | 2,685.00      | 4,779.46       |
| 3d, SW  | Va. avenue   | Va. avenue        | 2.25            | 1885       | 2,088.46      | 6,068.05       |
| 3d, SW  | B.           | Pa. avenue        | 2.25            | 1885       | 5,889.92      | 17,548.29      |
| 3d, SE  | E. Capitol   | Md. avenue        | 2.09            | 1881       | 3,520.63      | 7,791.44       |
| 3d, NE  | E. Capitol   | H.                | 2.25            | 1884       | 3,121.09      | 7,436.86       |
| 4th, NW | N. J. avenue | Fla. avenue       | 2.25            | 1891       | 3,833.98      | 9,163.99       |
| 4th, NE | R.           | Railroad track    | 2.25            | 1891       | 4,594.02      | 13,587.78      |
| 5th, NW | L.           | O.                | 2.25            | 1890       | 860.83        | 3,183.25       |
| 5th, NW | D.           | G.                | 1.46            | 1879       | 5,666.00      | 8,792.57       |
| 5th, SE | E. Capitol   | Pa. avenue        | 2.25            | 1885       | 3,340.97      | 11,592.33      |
| 5th, SE |              |                   | 2.27            | 1882       | 4,916.42      | 11,493.39      |



## XV

on 6-inch base.

| Cost of repairs per yard per year after date of laying. |      |       |      |      |       |      |      |       |       |      |      |      |      |      |     |     |                     |  |  |  |  |  |
|---------------------------------------------------------|------|-------|------|------|-------|------|------|-------|-------|------|------|------|------|------|-----|-----|---------------------|--|--|--|--|--|
| 6.                                                      | 7.   | 8.    | 9.   | 10.  | 11.   | 12.  | 13.  | 14.   | 15.   | 16.  | 17.  | 18.  | 19.  | 20.  | 21. | 22. | Contractor.         |  |  |  |  |  |
| 0                                                       | 0    | 0     | .001 | .044 | 0     | .03  | 0    | .047  | .018  | .032 | .014 |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| .02                                                     | .007 | .06   | 0    | .047 | .024  | .173 | .012 |       |       |      |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | .005 | .069  | .012 | .062 | .132  | 0    | .087 | 0     | .117  | .05  |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .006 | .037  | 0    | .056 | 0     | .03  | .135 | .026  |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | .007 | 0    | .006  | .035 |      |       |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | .009 | 0     | .03  | .03  | .061  | 0    | .10  | .038  | .134  | .016 |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | .045 | .007  | .052 | .015 | .015  | .158 | .947 | .048  | .012  |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| .011                                                    | .003 | .034  | .024 | .014 | .038  | .037 |      |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| 0                                                       | .002 | 0     | .012 | .011 | .023  | .195 | 0    | .051  | .006  | .053 | .006 | .029 |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | .022 | .074  | .057 | .106 | .144  | .119 | .176 | 1.455 |       |      |      |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | .007  | .002  | 0    | .007 |      |      |      |     |     | Davis.              |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Baldwin.            |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| .008                                                    | 0    | 0     | .056 | .014 | .029  | .072 | .675 | .03   | .009  | .077 | 0    | .007 |      |      |     |     | Baldwin.            |  |  |  |  |  |
| .002                                                    | 0    | .004  | .018 | .052 | .158  | .063 | .075 | .169  | 1.615 | 0    | 0    | 0    | .002 |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .004 | 0     | .007 | 0    | .003  | 0    | .009 | .026  | 0     | .038 |      |      |      |      |     |     | W. R. Davis.        |  |  |  |  |  |
| .01                                                     | .029 | 1.071 | .146 | .07  | .044  | .024 | .044 | .025  | 0     |      |      |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| .03                                                     | .131 | .111  | .067 | .008 | 1.025 | .035 | .021 |       |       |      |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | .068  | .078 | .09  | .004  | 0    | .076 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | .103  | 0    | .02  | .04   | .054 | .023 | .131  |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| .005                                                    | .04  | .08   | .055 | .025 | .016  | .125 |      |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| .006                                                    | .03  | 0     | .003 | 0    | .022  | .019 | .045 | .144  | 0     | .006 |      |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| .005                                                    | .002 | .012  | .013 | .03  | .05   | .012 | .062 | .015  | .063  | .024 | .015 | .111 | .041 | .035 |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | .012 | .038  | .009 | 0    | .065  | 0     | 0    | .011 |      |      |      |     |     | Gaskins.            |  |  |  |  |  |
| 0                                                       | 0    | .002  | .003 | .003 | 0     | .062 | 0    | 0     | .018  | .028 | .021 |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| .004                                                    | .02  | .017  | .164 | .042 | .002  | .044 | .075 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | .002  | 0    | .003 | .067  | .002 | .004 | 0     | 0     | .004 | .056 |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | .001  | 0    | .026 | .024  |      |      |       |       |      |      |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | 0    | .015  | .006 | .062 | .062  |      |      |       |       |      |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | .061  | .004 | .057 | .002  | 0    | .018 | .006  | .009  | .005 | .033 |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .015 | .058  | .15  | .017 | .034  | .071 | .059 |       |       |      |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | .004 | 0     | .118 | .046 | .037  | .081 | .031 | .021  |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | .011  | 0    | .082 | 0     | .029 | .03  |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | .001 | .024 | .047  | .001 | .007 | .031  | 0     | .008 | .025 |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | .01  | .018  | .025 | .044 | .031  | .106 | .043 | .026  | .085  | .383 | .067 | .01  |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | .12  | .003  | 0    | .018 | .038  | .031 | .051 | .012  | .02   | .035 |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | .001 | 0     | .011 | .004 | .002  | .012 | .032 | .045  | .007  | .015 | .095 |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | 0    | .0005 | .007 | .042 | .006  | .072 | 0    | .011  | .022  |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| .018                                                    | 0    | .008  | .004 | .005 | .022  | .048 | .08  | .118  | 0     | .008 | .008 |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | .015 | 0    | .0    | 0     | .005 |      |      |      |      |     |     | Baily and Fletcher. |  |  |  |  |  |
| .024                                                    | 0    | .071  | .033 | .071 | 0     | .025 | .074 | .011  |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | 0     | .007 | 0    | 0     | .083 | .008 | .05   | .011  | 0    | .024 |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Cranford.           |  |  |  |  |  |
| 0                                                       | .032 | 0     | .047 | .01  | .264  | 0    | .081 | .018  |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | .03  | 0     | .054 | 0    | .237  | .005 | 0    | .081  |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .01  | .056  | .084 | 0    | .003  | .167 |      |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| .002                                                    | .006 | .086  | .043 | .097 | .101  | .022 | .107 | .023  |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| .001                                                    | .021 | .035  | .181 | .073 | 0     | .165 | .028 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| .001                                                    | .004 | .029  | .153 | .055 | .023  | .061 | .046 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | .194  | .013 | .034 | .038  | .029 | .06  | .021  |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .002 | .131  | .047 | .052 | .001  | .09  | .017 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| .006                                                    | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | .025  | .01  | .138 | .032  | .131 | .042 | 1.418 | .024  |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | .003  | 0    | 0    | .018  |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .012 | .022  | .026 | .12  | .014  | .02  | .061 | .064  | .025  | .025 |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | .012  | .052 | .015 | .050  | .023 | .036 | .053  | .038  | .035 |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .005 | .053  | .043 | 0    | .061  | .037 | .058 | .074  |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | .055  | 0    | .062 | .026  | 0    | .021 | .021  | .021  | 0    | .038 |      |      |      |     |     | Baldwin.            |  |  |  |  |  |
| 0                                                       | .061 | .051  | .02  | .009 | .026  | .031 |      |       |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| .018                                                    | .053 | .051  | .045 | .082 | .06   | .102 | .046 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | .023 | .053  | .056 | .025 | .061  | 0    | .04  | .026  | .059  | .10  |      |      |      |      |     |     | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | .02   | .048 | 0    | .018  | .046 | .168 |       |       |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Cranford.           |  |  |  |  |  |
| 0                                                       | 0    | 0     | 0    | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0   | Do.                 |  |  |  |  |  |
| .003                                                    | .001 | 0     | .031 | .019 | .01   | .014 | .062 | .018  | .029  | .032 | .01  | .001 |      |      |     |     | Murlock.            |  |  |  |  |  |
| .026                                                    | .039 | .015  | .027 | .412 | .01   | .015 |      |       |       |      |      |      |      |      |     |     | Barber.             |  |  |  |  |  |
| 0                                                       | 0    | .002  | .027 | .032 | .002  | .146 | .032 | .004  | .029  |      |      |      |      |      |     |     | Do.                 |  |  |  |  |  |

## XVI OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Asphalt pavements on

| Street.      | From—                 | To—                | Price per yard. | Year laid. | Square yards. | Original cost. |
|--------------|-----------------------|--------------------|-----------------|------------|---------------|----------------|
| 6th, NW      | E                     | F                  | \$1.78          | 1878       | 1,313.00      | \$2,337.46     |
| 6th, NW      | N. Y. avenue          | Fla. avenue        | 1.85            | 1880       | 16,636.25     | 31,645.14      |
| 6th, NW      | Mo. avenue            | La. avenue         | 2.25            | 1885       | 5,078.33      | 11,037.29      |
| 8th, NW      | G                     | L                  | 2.29            | 1883       | 4,888.36      | 11,202.04      |
| 8th, NW      | N                     | R                  | 2.29            | 1883       | 6,492.52      | 14,972.57      |
| 8th, SE      | K                     | M                  | 2.33            | 1883       | 2,929.27      | 6,825.20       |
| 9th, NW      | P                     | R. I. avenue       | 2.28            | 1883       | 1,582.56      | 3,632.88       |
| 9th, NW      | P                     | Fla. avenue        | 1.46            | 1879       | 6,147.14      | 9,513.44       |
| 9th, NW      | R. I. avenue          | Fla. avenue        | 2.30            | 1884       | 3,371.20      | 7,758.90       |
| 10th, NW     | K                     | M                  | 1.47            | 1880       | 3,368.00      | 5,073.63       |
| 10th, NW     | F                     | G                  | 1.79            | 1880       | 995.00        | 1,774.88       |
| 10th, NW     | M                     | O                  | 1.85            | 1881       | 3,442.85      | 6,518.68       |
| 10th, NW     | O                     | R                  | 2.28            | 1883       | 4,433.00      | 10,109.14      |
| 10th, NW     | D                     | E                  | 2.25            | 1885       | 1,352.50      | 5,562.48       |
| 10th, NW     | S                     | T                  | 2.25            | 1891       | 1,947.76      | 6,343.91       |
| 10th, NW     | D                     | E                  | 1.78            | 1878       | 2,500.00      | 4,451.00       |
| 11th, NW     | O                     | Fla. avenue        | 2.25            | 1891       | 8,733.77      | 37,118.27      |
| 11th, NW     | E                     | Fla.               | 1.78            | 1893       | 1,292.00      | 2,315.80       |
| 12th, NW     | Pa. avenue            | G                  | 2.04            | 1881       | 198.36        | 406.55         |
| 12th, NW     | Intersection 12th and | R. I. avenue       | 2.27            | 1883       | 1,858.58      | 4,239.92       |
| 12th, NW     | O                     | O                  | 1.85            | 1881       | 1,522.36      | 2,873.43       |
| 12th, NW     | N                     | V                  | 2.00            | 1890       | 5,377.15      | 18,872.61      |
| 12th, NW     | S                     | Fla. avenue        | 2.25            | 1891       | 3,553.67      | 3,553.67       |
| 13th, NW     | B                     | C                  | 1.78            | 1878       | 1,760.00      | 3,132.02       |
| 13th, NW     | Intersection of N.    | Corcoran           | 1.80            | 1879       | 613.91        | 1,120.02       |
| 13th, NW     | P                     | Intersection of B. | 2.09            | 1881       | 2,125.67      | 4,868.91       |
| 13th, NW     | T                     | Fla. avenue        | 2.00            | 1889       | 775.21        | 1,705.58       |
| 13th, NW     | H                     | do                 | 2.25            | 1891       | 7,271.00      | 20,372.48      |
| 14th, NW     | H                     | M (west side)      | 1.97            | 1879       | 29,085.00     | 60,211.69      |
| 14th, NW     | H                     | Fla. avenue        | 1.75            | 1879       | 5,682.00      | 10,286.85      |
| 14th, NW     | M                     | Fla. avenue        | 2.26            | 1882       | 14,582.94     | 33,716.99      |
| 15th, NW     | K                     | R. I. avenue       | 1.85            | 1881       | 6,920.55      | 12,996.80      |
| 15th, NW     | S                     | U                  | 2.25            | 1885       | 3,768.00      | 9,467.76       |
| 15th, NW     | Pa. avenue            | N. Y. avenue       | 2.35            | 1889       | 4,218.53      | 13,409.62      |
| 16th, NW     | H                     | Scott square       | 2.09            | 1881       | 12,450.00     | 27,336.05      |
| 16th, NW     | R                     | Fla. avenue        | 2.29            | 1883       | 13,391.28     | 31,372.86      |
| 18th, NW     | Intersection of G.    |                    | 1.47            | 1879       | 262.74        | 387.92         |
| 18th, NW     | Pa. avenue            | E                  | 2.05            | 1881       | 4,895.19      | 10,465.79      |
| 18th, NW     | D                     | E                  | 2.25            | 1891       | 1,544.09      | 5,200.72       |
| 18th, NW     | N. H. avenue          | S                  | 2.25            | 1891       | 3,129.91      | 10,799.67      |
| 19th, NW     | N                     | Circle             | 2.06            | 1881       | 2,468.72      | 5,107.76       |
| 20th, NW     | Pa. avenue            | I                  | 1.46            | 1879       | 981.00        | 1,485.70       |
| 22d, NW      | K                     | M                  | 2.25            | 1885       | 2,852.00      | 6,720.28       |
| 30th, NW     | N                     | P                  | 2.23            | 1881       | 2,932.19      | 7,969.83       |
| 31st, NW     | P                     | U                  | 2.26            | 1885       | 1,832.23      | 4,140.82       |
| 35th, NW     | U                     | Tenallytown road   | 2.25            | 1891       | 6,009.13      | 18,241.69      |
| Ind. avenue  | 1st                   | 3d                 | 2.00            | 1887       | 8,529.28      | 23,824.87      |
| La. avenue   | 3d                    | 7th                | 1.85            | 1881       | 4,054.78      | 6,888.66       |
| Mass. avenue | 9th                   | 13th               | 1.47            | 1880       | 9,920.00      | 14,748.85      |
| Mass. avenue | 3d                    | 7th (south side)   | 1.85            | 1881       | 3,910.36      | 7,349.45       |
| Mass. avenue | 1st                   | 3d                 | 2.26            | 1882       | 3,857.74      | 8,831.79       |
| Mass. avenue | 4th                   | 7th                | 2.29            | 1881       | 3,108.45      | 7,112.15       |
| Mass. avenue | N. Capitol            | 1st                | 2.25            | 1891       | 4,068.80      | 12,102.25      |
| Mid. avenue  | 1st                   | 3d                 | 2.29            | 1883       | 3,394.00      | 7,799.72       |
| N. H. avenue | Pa. avenue            | M                  | 1.47            | 1879       | 6,992.00      | 10,524.79      |
| N. H. avenue | M                     | P                  | 2.25            | 1882       | 10,047.00     | 22,988.24      |
| N. H. avenue | P                     | Q                  | 2.26            | 1885       | 2,537.73      | 6,029.29       |
| N. J. avenue | D                     | L                  | 2.26            | 1882       | 21,462.90     | 49,632.56      |
| N. J. avenue | L                     | N. Y. avenue       | 2.25            | 1884       | 3,663.52      | 8,398.17       |
| N. Y. avenue | 13th                  | 14th               | 2.00            | 1891       | 5,355.27      | 11,273.23      |
| Pa. avenue   | 1st                   | 17th               | 3.78            | 1876-7     | 69,299.83     | 132,387.10     |
| R. I. avenue | 13th                  | 16th               | 1.84            | 1881       | 7,723.37      | 14,574.26      |
| R. I. avenue | 9th                   | 13th               | 2.26            | 1882       | 9,219.23      | 21,077.10      |
| R. I. avenue | 5th                   | 9th                |                 | 1883       | 8,120.09      | (a)            |
| Vt. avenue   | P                     | R                  | 2.09            | 1881       | 6,103.35      | 16,374.36      |
| N. Capitol   | B                     | C                  | 2.25            | 1883       | 2,789.62      | 6,755.40       |
| N. Capitol   | K                     | M                  | 2.25            | 1891       | 6,207.28      | 19,418.86      |
| E. Capitol   | 1st                   | 9th                | 2.04            | 1879       | 10,511.00     | 21,521.70      |
| E. Capitol   | 13th                  | 11th               | 2.35            | 1883       | 6,988.68      | 16,462.35      |
| Grant        | 9th                   | 19th               | 2.25            | 1890       | 1,162.89      | 4,841.92       |
| Madison      | 15th                  | 10th               | 4.25            | 1875       | 1,434.61      | 6,097.19       |
| Riggs        | 16th                  | 17th               | 3.00            | 1875       | 2,674.00      | 8,022.00       |
| Potomac      | Prospect              | 17th               | 2.25            | 1892       | 1,620.14      | 5,078.76       |
| Potomac      | Prospect              | O                  | 2.25            | 1884       | 1,829.60      | 4,332.13       |

a Private expense.

# OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. XVII

6-inch base—Continued.

| Cost of repairs per yard per year after date of laying. |       |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      |             |  |  |  |  |  | Contractor. |
|---------------------------------------------------------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|-------------|--|--|--|--|--|-------------|
| 6.                                                      | 7.    | 8.    | 9.    | 10.  | 11.   | 12.   | 13.   | 14.   | 15.   | 16.  | 17.  | 18.  | 19.  | 20.  | 21.  | 22.  |             |  |  |  |  |  |             |
| 0                                                       | .003  | .107  | .155  | .111 | .03   | 2.702 | 0     | .004  | 0     | .005 | 0    | .008 | .01  |      |      |      | Baldwin.    |  |  |  |  |  |             |
| .0001                                                   | 0     | .0005 | .0005 | .036 | .004  | .023  | .025  | .016  | .003  | .006 | .006 |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| .003                                                    | .016  | .014  | .036  | .03  | .05   | .043  |       |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | .005  | .001  | .168  | .039 | .04   | .001  | .019  |       |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     | .132  | .009  | .032 | .034  | .01   | .078  | .014  |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| .009                                                    | .018  | 0     | .015  | .011 | .012  | .047  | .024  | .009  | .048  |      |      |      |      |      |      |      | H. L. Cran- |  |  |  |  |  |             |
| 0                                                       | 0     | .022  | .03   | .141 | 0     | .064  |       |       |       |      |      |      |      |      |      |      | ford.       |  |  |  |  |  |             |
| 0                                                       | 0     | .006  | 0     | .002 | 0     | .009  | 0     | .023  | .036  | .001 | .004 | .003 |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | .095  | .03  | .029  | .042  |       |       |       |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | 0     | .023  | .046  | .023 | .026  | .03   | .021  | .028  | .025  | .249 |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | 0     | .007  | 0     | .063 | 0     | 0     | .026  |       |       |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| .003                                                    | 0     | .019  | .019  | .041 | 0     | 0     | .053  | 0     | .058  |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| .001                                                    | 0     | .014  | .064  | .011 | .179  | 0     | .147  | .006  |       |      |      |      |      |      |      |      | Cranford &  |  |  |  |  |  |             |
| 0                                                       | .009  | .029  | .012  | .024 | .036  | .01   |       |       |       |      |      |      |      |      |      |      | F.          |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | .049  | .062  | .082 | .085  | .146  | .157  | 1.736 | 0     | 0    | 0    | .033 |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | .02   | .947  | .05   | .03  | .041  | .09   | .044  | .102  | .038  | .016 | .126 | .069 | .05  |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | 0     | .084  | .056  | .075 | .001  | .061  | .032  |       |       |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | .011  | 0     | 0     | .012 | 0     | 0     | 0     | 0     | .003  |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Cranford P. |  |  |  |  |  |             |
| 0                                                       |       |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Co.         |  |  |  |  |  |             |
| 0                                                       | .104  | .10   | .021  | .128 | .184  | .118  | 1.324 | .021  | .003  | .045 |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | 0     | 0    | 0     | 0     | 0     | 0     | 0     | .007 | .141 |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | .029  | .006  | .023  | .086 | .05   | .029  | .049  | .024  | .101  | .01  |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| .005                                                    | .017  | .035  | .058  | .038 | .052  | .69   | .841  | .002  | 0     | .022 | .001 |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | .041  | 0     | 0     | .097 | .047  | .077  | .041  | .026  | 1.093 | 0    | .012 | .044 |      |      |      |      | Murdock.    |  |  |  |  |  |             |
| 0                                                       | .026  | .009  | .07   | .055 | .032  | .054  | .153  | .03   | .041  |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| .031                                                    | .025  | .023  | 0     | 0    | .004  | 0     | .045  | .006  | .008  | .028 |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | .006  | 0     | 0     | .006 | .007  | .016  |       |       |       |      |      |      |      |      |      |      | Cranford P. |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Co.         |  |  |  |  |  |             |
| .001                                                    | 0     | .023  | .004  | .036 | .015  | .022  | 0     | .01   | .048  | .032 |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | .016  | 0     | .028  | .179 | .067  | .002  | .048  | .087  | .472  |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | 0     | .278 | 0     | .167  |       |       |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | 0     | 0    | 0     | .167  |       |       |       |      |      |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | .007  | 0    | .007  | .04   | .046  | .011  | .045  | .04  |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | .021  | 0     | 0     | .076 | 0     | .009  | .043  | .07   |       |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | 0     | .072 | 0     | 0     | .028  | .132  | 0     | 0    | .02  |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | 0     | .025 | 0     | .049  |       |       |       |      |      |      |      |      |      |      | Murdock.    |  |  |  |  |  |             |
| 0                                                       | 0     | .015  | 0     | .109 | .131  | .047  | .039  | 0     | .069  |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | .047  | 0    | 0     | .044  |       |       |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      |             |  |  |  |  |  |             |
| .0005                                                   | .007  | .01   | .008  | .008 |       |       |       |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | .044  | .003  | .034 | .064  | .002  | 0     | .009  | .031  | .019 |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | .0001 | .308  | .005  | .003 | .021  | .011  | 0     | .015  | .006  | .014 | .03  |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| .207                                                    | .001  |       | .06   | .021 | .097  | .075  | .09   | .029  | .056  | .049 |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| .004                                                    | .015  | .111  | .021  | 1.48 | 0     | .004  | .002  | .04   | .033  |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | .038  | .129  | .024  | .018 | .029  | 0     | .018  | .026  |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | .004  | .019  | 0    | .091  | .018  | .065  | .065  |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     | .023  | 0     | 0    | .013  | 0     | .049  | .023  | .003  | 0    | .052 |      |      |      |      |      | Baldwin.    |  |  |  |  |  |             |
| 0                                                       | .004  | .03   | .043  | .06  | .03   | .011  | .094  | .017  |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | 0     | .025  | .003 | .027  |       |       |       |       |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | 0     | .004  | .007  | .027 | .04   | .081  | .023  | .015  | .033  | .036 |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | .014  | .061  | .031  | .016 | .054  | .051  |       |       |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| .006                                                    | .012  |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | .052  | .074  | .036  | .005 | .383  | .011  | .015  | .006  | .016  | .002 |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| .065                                                    | .011  | .014  | .011  | .034 | .055  | .023  | .004  | .036  | .03   |      |      |      |      |      |      |      | Bailey &    |  |  |  |  |  |             |
| .015                                                    | .012  | .117  | .082  | .064 | .002  | .10   | .081  |       |       |      |      |      |      |      |      |      | Fletcher.   |  |  |  |  |  |             |
| 0                                                       | 0     | .016  | .029  | .142 | .023  | .047  | .035  | 0     | .033  | .107 |      |      |      |      |      |      | Cranford.   |  |  |  |  |  |             |
| .035                                                    | 0     | .028  | .086  | 0    | .038  | 0     | .086  | .016  |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| .002                                                    | .001  | .118  | .109  | .134 | 1.066 | .301  | 0     | 0     | .039  | .016 |      |      |      |      |      |      | Do.         |  |  |  |  |  |             |
| 0                                                       | 0     | .033  | .014  | .028 | .001  | .009  | .072  | .029  |       |      |      |      |      |      |      |      | Murdock.    |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |
| 0                                                       | 0     | .076  | 0     | .006 | 0     | .01   | .062  | .023  | .328  | .027 | .053 | .024 | 0    | .055 |      |      | Cranford.   |  |  |  |  |  |             |
| 0                                                       | 0     | .0006 | .006  | .008 | .003  | 0     | .046  | .054  | .027  | 0    | .029 | .041 | .033 | .007 | .128 | .031 | Davis.      |  |  |  |  |  |             |
| 0                                                       | 0     |       |       |      |       |       |       |       |       |      |      |      |      |      |      |      | Murdock.    |  |  |  |  |  |             |
| 0                                                       | 0     | .015  | .128  | .024 | .032  | 0     | .195  |       |       |      |      |      |      |      |      |      | Barber.     |  |  |  |  |  |             |

*Asphalt block pavements.*

| Street.  | From—                     | To—          | Price per yard.                  | Year laid. | Square yards. | Original cost. | Contractor.                           | Remarks.                                                     |
|----------|---------------------------|--------------|----------------------------------|------------|---------------|----------------|---------------------------------------|--------------------------------------------------------------|
| A. NE.   | 7th                       | 9th          | \$2.00                           | 1890       | 2,300.22      | \$5,725.70     | Patrick Maloney                       |                                                              |
| A. SE.   | 6th                       | 7th          | 1.98 <sup>1</sup> / <sub>2</sub> | 1887       | 2,390.86      | 5,994.82       | do.                                   |                                                              |
| A. SE.   | 3d                        | 6th          | 2.10                             | 1886       | 3,317.21      | 7,918.95       | Washington Asphalt Block and Tile Co. |                                                              |
| A. SW.   | 7th                       | N. C. avenue | 2.00                             | 1894       | 3,043.07      | 8,182.45       | do.                                   |                                                              |
| B. SE.   | 11th                      | N. C. avenue | 2.00                             | 1891       | 4,577.53      | 15,475.22      | P. Maloney                            |                                                              |
| C. NE.   | 4th                       | 6th          | 2.00                             | 1886       | 4,478.23      | 12,493.13      | do.                                   |                                                              |
| C. NE.   | 6th                       | 8th          | 2.00                             | 1888       | 3,986.09      | 9,895.42       | do.                                   |                                                              |
| C. NE.   | 8th                       | 10th         | 2.00                             | 1891       | 2,180.44      | 7,249.09       | do.                                   |                                                              |
| C. SE.   | N. J. avenue              | 4th          | 2.10                             | 1884       | 6,922.32      | 17,212.57      | Maloney & Knight                      |                                                              |
| C. SE.   | 9th                       | 12th         | 2.10                             | 1885       | 3,253.11      | 7,679.93       | P. Maloney                            |                                                              |
| C. SE.   | 6th                       | 7th          | 2.10                             | 1890       | 2,141.67      | 5,878.07       | do.                                   |                                                              |
| C. SW.   | 12th                      | 14th         | 2.10                             | 1888       | 3,839.57      | 9,115.37       | do.                                   |                                                              |
| C. SE.   | 4th                       | 6th          | 2.10                             | 1840       | 1,463.64      | 3,499.49       | do.                                   |                                                              |
| C. SE.   | 4th                       | 6th          | 2.10                             | 1891       | 1,613.50      | 3,814.05       | do.                                   |                                                              |
| D. SE.   | 1st                       | 3d           | 2.10                             | 1889       | 4,393.53      | 11,261.93      | do.                                   |                                                              |
| D. SE.   | 7th                       | 9th          | 2.10                             | 1889       | 1,205.12      | 2,906.59       | do.                                   |                                                              |
| D. SE.   | 3d                        | 6th          | 2.10                             | 1890       | 3,859.57      | 9,978.56       | do.                                   |                                                              |
| D. SE.   | 9th                       | Pa. avenue   | 2.10                             | 1892       | 1,951.42      | 6,167.89       | do.                                   |                                                              |
| D. SW.   | 7th                       | 9th          | 1.84                             | 1896       | 2,064.07      | 4,469.30       | do.                                   |                                                              |
| E. NW.   | 13th                      | 14th         | 2.37 <sup>1</sup> / <sub>2</sub> | 1878       | 1,093.35      | 2,661.61       | Jonathan Taylor                       | Relaid by P. Maloney, 1889.                                  |
| E. NE.   | 1st.                      | 4th          | 2.00                             | 1893       | 5,640.27      | 16,003.96      | Washington Asphalt Block and Tile Co. |                                                              |
| E. SE.   | S. Capitol.               | 3d           | 1.78                             | 1896       | 7,819.48      | 18,838.00      | do.                                   |                                                              |
| F. SW.   | 7th                       | 10th         | 1.84                             | 1896       | 2,972.78      | 8,688.56       | do.                                   |                                                              |
| G. SE.   | 11th                      | Pa. avenue   | 1.77                             | 1891       | 2,730.24      | 8,084.55       | P. Maloney                            |                                                              |
| H. NW.   | Conn. avenue              | Vt. avenue.  | 2.00                             | 1891       | 2,888.93      | 7,961.03       | John Cuthmore                         | Resurfaced by H. L. Cranford, 1887; cost, \$3,859.48.        |
| I. SW.   | 3d                        | 6th          | 1.77                             | 1896       | 4,850.13      | 10,432.93      | Washington Asphalt Block and Tile Co. |                                                              |
| N. NW.   | 28th                      | 30th         | 1.598                            | 1882       | 1,598.68      | 3,824.24       | P. Maloney                            |                                                              |
| W. NW.   | Le Droit avenue eastward. |              |                                  | 1895       | 3,023.52      | 3,023.52       | Washington Asphalt Block and Tile Co. | Resurfaced with asphalt by H. L. Cranford; cost, \$2,409.51. |
| 1st, SE. | C                         | D            | 2.00                             | 1889       | 1,260.05      | 3,631.08       | B. Maloney                            | Laid at cost of property owners.                             |
| 2d, NE.  | C                         | Md. avenue   | 1.98 <sup>1</sup> / <sub>2</sub> | 1887       | 1,845.75      | 4,787.02       | do.                                   |                                                              |
| 2d, NE.  | C                         | F            | 2.00                             | 1894       | 4,323.42      | 10,787.77      | Washington Asphalt Block and Tile Co. |                                                              |
| 3d, NE.  | C                         | Md. avenue   | 1.99                             | 1887       | 1,090.20      | 2,976.63       | P. Maloney                            |                                                              |
| 3d, SE.  | Pa. avenue.               | C            | 1.99                             | 1887       | 987.30        | 2,561.51       | do.                                   |                                                              |

|              |                            |              |       |      |           |           |                                       |                                                                                                  |
|--------------|----------------------------|--------------|-------|------|-----------|-----------|---------------------------------------|--------------------------------------------------------------------------------------------------|
| 4th, SE      | Pa. avenue                 | E. Capitol   | 2.19  | 1883 | 4,152.06  | 9,233.33  | do                                    | Resurfaced with asphalt by H. L. Cranford, 1897; cost, \$5,257.18.                               |
| 4th, NE      | E. Capitol                 | Mass. avenue | 2.00  | 1885 | 4,595.67  | 10,298.41 | Maloney & Knight                      |                                                                                                  |
| 4th, NE      | Mass. avenue               | Md. avenue   | 2.00  | 1887 | 1,912.16  | 4,729.46  | P. Maloney                            |                                                                                                  |
| 4th, SE      | Pa. avenue                 | N. C. avenue | 2.00  | 1890 | 592.61    | 1,336.29  | do                                    |                                                                                                  |
| 4th, NE      | C                          | D            | 2.00  | 1890 | 896.62    | 1,971.92  | do                                    |                                                                                                  |
| 4th, NW      | Pa. avenue                 | Md. avenue   | 2.00  | 1889 | 4,548.93  | 14,660.08 | do                                    |                                                                                                  |
| 5th, NE      | E. Capitol                 | D            | 2.00  | 1886 | 4,876.43  | 12,130.98 | do                                    |                                                                                                  |
| 5th, SE      | C, crossing square         | D            | 2.00  | 1890 | 692.07    | 2,675.02  | do                                    |                                                                                                  |
| 5th, NE      | Pa. avenue                 | E            | 2.00  | 1890 | 875.07    | 2,060.02  | do                                    |                                                                                                  |
| 6th, SE      | Pa. avenue                 | E. Capitol   | 1.93  | 1887 | 4,398.76  | 10,429.80 | do                                    |                                                                                                  |
| 6th, SE      | Pa. avenue                 | E            | 2.00  | 1886 | 5,948.90  | 13,736.66 | do                                    |                                                                                                  |
| 6th, SE      | E. Capitol                 | Md. avenue   | 2.00  | 1886 | 4,696.32  | 10,799.86 | do                                    |                                                                                                  |
| 6th, NE      | Mass. avenue               | Md. avenue   | 2.10  | 1887 | 1,907.60  | 4,698.86  | do                                    |                                                                                                  |
| 6th, SE      | E                          | Pa. avenue   | 2.10  | 1889 | 4,774.52  | 12,150.51 | do                                    |                                                                                                  |
| 6th, NE      | C                          | D            | 2.00  | 1891 | 837.82    | 1,974.79  | do                                    |                                                                                                  |
| 7th, NW      | Intersection of La. avenue |              | 1.87  | 1879 | 3,214.08  | 6,349.51  | McKnight & Burns                      | Minor repairs, 1891, 0.062 cent; 1893 0.061 cent; 1897, 0.75 cent per square yard of total area. |
| 7th, NE      | E. Capitol                 | Mass. avenue | 1.99  | 1888 | 3,339.57  | 8,941.78  | P. Maloney                            |                                                                                                  |
| 7th, SE      | E. Capitol                 | Pa. avenue   | 1.984 | 1887 | 7,223.00  | 22,140.38 | do                                    |                                                                                                  |
| 7th, NE      | D                          | Pa. avenue   | 2.00  | 1889 | 3,315.40  | 11,144.14 | do                                    |                                                                                                  |
| 7th, SE      | D                          | Pa. avenue   | 2.00  | 1889 | 8,394.28  | 27,312.96 | do                                    |                                                                                                  |
| 8th, NE      | E. Capitol                 | Mass. avenue | 2.60  | 1889 | 2,969.41  | 7,317.65  | do                                    |                                                                                                  |
| 8th, NE      | Md. avenue                 | B            | 2.00  | 1891 | 5,855.97  | 15,645.38 | do                                    |                                                                                                  |
| 9th, NE      | Md. avenue                 | Mass. avenue | 2.00  | 1891 | 6,711.83  | 21,589.26 | do                                    |                                                                                                  |
| 10th, NE     | B                          | Md. avenue   | 2.00  | 1886 | 2,410.69  | 5,543.79  | do                                    |                                                                                                  |
| 10th, SE     | D                          | Pa. avenue   | 2.00  | 1891 | 788.12    | 2,488.99  | do                                    |                                                                                                  |
| 10th, SE     | Pa. avenue                 | I            | 1.80  | 1895 | 4,927.38  | 12,466.05 | Washington Asphalt Block and Tile Co. |                                                                                                  |
| 11th, SE     | E. Capitol                 | C            | 2.00  | 1891 | 8,076.09  | 23,775.77 | P. Maloney                            |                                                                                                  |
| 11th, SE     | C                          | Pa. avenue   | 2.00  | 1893 | 7,005.88  | 19,522.77 | Washington Asphalt Block and Tile Co. |                                                                                                  |
| 11th, NE     | E. Capitol                 | Mass. avenue | 1.84  | 1895 | 1,092.90  | 2,500.04  | do                                    |                                                                                                  |
| 13th, NW     | B                          | D            | 1.84  | 1895 | 3,016.31  | 6,625.03  | do                                    |                                                                                                  |
| 15th, NW     | Pa. avenue                 | D            | 2.19  | 1893 | 7,012.10  | 15,911.25 | P. Maloney                            | Resurfaced by Cranford, 1893-94; cost \$8,680.41.                                                |
| 18th, NW     | K                          | L            | 2.10  | 1886 | 1,430.80  | 3,285.68  | do                                    | Paid by property owners.                                                                         |
| 21st, NW     | Q                          | Hillyer      | 2.10  | 1884 | 956.00    | do        | Superintendent of streets             |                                                                                                  |
| 23d, NW      | K                          | M            | 2.10  | 1886 | 2,386.81  | 5,496.99  | P. Maloney                            | Resurfaced by Cranford, 1893-94; cost \$4,001.78.                                                |
| 29th, NW     | N                          | P            | 2.19  | 1883 | 2,966.05  | 6,495.10  | do                                    | Resurfaced by Cranford, 1893-94; cost \$4,227.15.                                                |
| 31st, NW     | N                          | P            | 2.19  | 1883 | 2,966.05  | 6,495.10  | do                                    |                                                                                                  |
| Mass. avenue | 6th, NE                    | 8th          | 2.00  | 1889 | 3,338.56  | 5,607.73  | do                                    |                                                                                                  |
| Mass. avenue | 1st, NE                    | 2d           | 2.00  | 1889 | 6,749.41  | 16,444.36 | do                                    |                                                                                                  |
| Mass. avenue | 8th, NE                    | 11th         | 1.84  | 1895 | 3,960.59  | 11,683.74 | Washington Asphalt Block and Tile Co. |                                                                                                  |
| Mass. avenue | 1st, NE                    | 4th          | 2.00  | 1887 | 6,398.35  | 13,677.36 | do                                    |                                                                                                  |
| Md. avenue   | 6th, NE                    | 11th         | 2.00  | 1889 | 11,535.48 | 28,944.66 | P. Maloney                            |                                                                                                  |
| Md. avenue   | 6th, NE                    | 11th         | 2.00  | 1889 | 14,950.90 | 39,633.96 | do                                    |                                                                                                  |
| Md. avenue   | 11th, NE                   | 13th         | 2.00  | 1890 | 8,268.53  | 22,965.91 | do                                    |                                                                                                  |

## XVIII OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

## Asphalt block pavements.

| Street. | From—                     | To—          | Price per yard. | Year laid. | Square yards. | Original cost. | Contractor.                           | Remarks.                                                     |
|---------|---------------------------|--------------|-----------------|------------|---------------|----------------|---------------------------------------|--------------------------------------------------------------|
| A. NE   | 7th                       | 9th          | \$2.00          | 1880       | 2,300.22      | \$5,725.70     | Patrick Maloney                       |                                                              |
| A. SE   | 6th                       | 7th          | 1.93            | 1887       | 2,390.86      | 5,994.82       | do                                    |                                                              |
| A. SE   | 6th                       | 7th          | 2.10            | 1886       | 3,317.21      | 7,918.95       | Washington Asphalt Block and Tile Co. |                                                              |
| A. S.W. | 3d                        | N. C. avenue | 2.00            | 1894       | 3,043.07      | 8,182.45       | P. Maloney                            |                                                              |
| B. SE   | 11th                      | N. C. avenue | 2.00            | 1891       | 4,577.53      | 15,475.22      | do                                    |                                                              |
| C. NE   | 4th                       | 6th          | 2.00            | 1886       | 4,478.23      | 12,493.13      | do                                    |                                                              |
| C. NE   | 6th                       | 8th          | 2.00            | 1888       | 3,986.09      | 9,815.42       | do                                    |                                                              |
| C. NE   | 8th                       | 10th         | 2.00            | 1891       | 2,180.44      | 17,249.99      | do                                    |                                                              |
| C. SE   | N. J. avenue              | 4th          | 2.10            | 1884       | 6,922.32      | 17,212.57      | Maloney & Knight                      |                                                              |
| C. SE   | 9th                       | 12th         | 2.10            | 1885       | 3,255.11      | 5,978.83       | P. Maloney                            |                                                              |
| C. SE   | 6th                       | 7th          | 2.10            | 1890       | 2,141.67      | 5,978.83       | do                                    |                                                              |
| C. SW   | 12th                      | 14th         | 2.10            | 1888       | 3,839.67      | 8,499.36       | do                                    |                                                              |
| C. SE   | 4th                       | 6th          | 2.10            | 1891       | 1,613.54      | 3,814.05       | do                                    |                                                              |
| C. SE   | 4th                       | 6th          | 2.10            | 1891       | 4,293.53      | 11,261.93      | do                                    |                                                              |
| D. SE   | 1st                       | 3d           | 2.10            | 1889       | 1,295.12      | 2,906.59       | do                                    |                                                              |
| D. SE   | 4th                       | 6th          | 2.10            | 1889       | 3,859.57      | 9,978.56       | do                                    |                                                              |
| D. SE   | 3d                        | 6th          | 2.10            | 1890       | 1,931.42      | 5,167.89       | do                                    |                                                              |
| D. SE   | 3d                        | P. avenue    | 1.84            | 1892       | 2,084.07      | 4,469.30       | Washington Asphalt Block and Tile Co. |                                                              |
| D. SW   | 7th                       | 9th          | 1.84            | 1896       | 2,084.07      | 4,469.30       | do                                    |                                                              |
| E. NW   | 13th                      | 14th         | 2.37            | 1878       | 1,093.35      | 2,661.61       | Jonathan Taylor                       | Relaid by P. Maloney, 1889.                                  |
| E. NE   | 1st.                      | 4th          | 2.00            | 1893       | 5,640.27      | 16,003.96      | Washington Asphalt Block and Tile Co. |                                                              |
| E. SE   | S. Capitol                | 3d           | 1.78            | 1896       | 7,819.48      | 18,838.00      | do                                    |                                                              |
| F. SW   | 7th                       | 10th         | 1.77            | 1896       | 3,972.78      | 8,688.56       | do                                    |                                                              |
| G. SE   | 11th                      | P. avenue    | 2.60            | 1891       | 1,730.24      | 8,084.55       | P. Maloney                            |                                                              |
| H. NW   | Conn. avenue              | Vt. avenue   | 1.76            | 1881       | 2,888.49      | 7,661.03       | John Cudmore                          | Resurfaced by H. L. Cranford, 1887; cost, \$3,859.48.        |
| I. SW   | 3d                        | 6th          | 1.77            | 1896       | 4,850.13      | 10,482.93      | Washington Asphalt Block and Tile Co. |                                                              |
| N. NW   | 28th                      | 30th         |                 | 1882       | 1,598.68      | 3,824.24       | P. Maloney                            | Resurfaced with asphalt by H. L. Cranford; cost, \$2,409.51. |
| W. NW   | Le Droit avenue eastward. |              |                 | 1895       |               | 3,023.52       | Washington Asphalt Block and Tile Co. | Laid at cost of property owners.                             |
| 1st. SE | C                         | D            | 2.00            | 1889       | 1,260.05      | 3,631.08       | B. Maloney                            |                                                              |
| 2d. NE  | C                         | Md. avenue   | 1.93            | 1887       | 1,845.75      | 4,787.02       | do                                    |                                                              |
| 2d. NE  | C                         | F            | 2.00            | 1894       | 4,323.42      | 10,787.77      | Washington Asphalt Block and Tile Co. |                                                              |
| 3d. NE  | C                         | Md. avenue   | 1.99            | 1887       | 1,090.20      | 2,976.63       | P. Maloney                            |                                                              |
| 3d. SE  | P. avenue                 | C            | 1.99            | 1887       | 987.30        | 2,561.51       | do                                    |                                                              |

# OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. XIX

Resurfaced with asphalt by H. L. Cranford, 1897; cost, \$5,257.18.

|              |                             |              |       |      |           |           |                                       |
|--------------|-----------------------------|--------------|-------|------|-----------|-----------|---------------------------------------|
| 4th, SE      | Pa. avenue.                 | E. Capitol   | 2.19  | 1883 | 4,152.06  | 9,233.33  | .....do                               |
| 4th, NE      | E. Capitol                  | Md. avenue   | 2.10  | 1885 | 4,595.67  | 10,228.41 | Maloney & Knight                      |
| 4th, NE      | Mass. avenue                | Md. avenue   | 2.00  | 1887 | 1,912.16  | 4,472.46  | P. Maloney                            |
| 4th, SE      | Pa. avenue                  | N. C. avenue | 2.00  | 1890 | 592.61    | 1,389.29  | .....do                               |
| 4th, NE      | C                           | N. C. avenue | 2.00  | 1890 | 836.92    | 1,971.92  | .....do                               |
| 4th, NW      | Pa. avenue                  | D            | 2.00  | 1889 | 4,548.93  | 14,669.00 | .....do                               |
| 5th, NE      | E. Capitol                  | Md. avenue   | 2.10  | 1886 | 4,876.43  | 12,130.98 | .....do                               |
| 5th, SE      | C, crossing square          | D            | 2.00  | 1890 | 693.07    | 1,675.01  | .....do                               |
| 5th, NE      | C                           | D            | 2.00  | 1890 | 875.07    | 2,060.02  | .....do                               |
| 6th, SE      | Pa. avenue                  | E            | 1.99  | 1887 | 4,398.76  | 10,429.89 | .....do                               |
| 6th, SE      | Pa. avenue                  | E. Capitol   | 2.10  | 1886 | 5,948.90  | 13,786.66 | .....do                               |
| 6th, SE      | E. Capitol                  | Md. avenue   | 2.10  | 1886 | 4,626.32  | 10,790.86 | .....do                               |
| 6th, NE      | Mass. avenue                | Md. avenue   | 2.10  | 1887 | 1,907.60  | 4,698.86  | .....do                               |
| 6th, SE      | E. Capitol                  | Va. avenue   | 2.10  | 1889 | 4,774.52  | 12,150.51 | .....do                               |
| 6th, NE      | C                           | D            | 2.10  | 1891 | 837.85    | 1,974.79  | .....do                               |
| 7th, NW      | Intersection of La. avenue. |              | 1.87  | 1879 | 3,214.08  | 6,349.51  | McKnight & Burns                      |
| 7th, NE      | E. Capitol                  | Mass. avenue | 1.99  | 1888 | 3,339.57  | 8,941.78  | P. Maloney                            |
| 7th, SE      | E. Capitol                  | Pa. avenue   | 1.98  | 1887 | 7,223.00  | 22,140.38 | .....do                               |
| 7th, NE      | B                           | D            | 2.00  | 1889 | 3,315.40  | 11,144.14 | .....do                               |
| 8th, SE      | E. Capitol                  | Va. avenue   | 2.00  | 1889 | 8,394.28  | 27,312.26 | .....do                               |
| 8th, NE      | Mass. avenue                | .....        | 2.60  | 1889 | 2,969.41  | 7,341.65  | .....do                               |
| 8th, NE      | B                           | .....        | 2.00  | 1891 | 5,855.97  | 15,645.38 | .....do                               |
| 9th, NE      | Md. avenue                  | .....        | 2.00  | 1891 | 6,711.88  | 21,589.26 | .....do                               |
| 10th, NE     | B                           | Md. avenue   | 2.10  | 1886 | 2,410.69  | 5,543.79  | .....do                               |
| 10th, SE     | D                           | Pa. avenue   | 2.00  | 1891 | 788.12    | 2,488.99  | .....do                               |
| 10th, SE     | Pa. avenue                  | I            | 1.80  | 1895 | 4,927.38  | 12,466.05 | Washington Asphalt Block and Tile Co. |
| 11th, SE     | E. Capitol                  | C            | 2.00  | 1891 | 8,076.09  | 23,775.77 | P. Maloney                            |
| 11th, SE     | C                           | Pa. avenue   | 2.00  | 1893 | 7,065.88  | 19,522.77 | Washington Asphalt Block and Tile Co. |
| 11th, NE     | E. Capitol                  | Mass. avenue | 1.84  | 1895 | 1,092.90  | 2,500.04  | .....do                               |
| 13th, NW     | B                           | D            | 1.84  | 1895 | 3,016.31  | 6,635.03  | .....do                               |
| 15th, NW     | Pa. avenue                  | B            | 2.19  | 1883 | 7,012.10  | 15,911.25 | P. Maloney                            |
| 18th, NW     | K                           | L            | 2.10  | 1886 | 1,430.80  | 3,285.68  | .....do                               |
| 21st, NW     | Q                           | Ellis        | ..... | 1884 | 956.00    | .....     | Superintendent of streets             |
| 23d, NW      | K                           | M            | 2.10  | 1886 | 2,366.81  | 5,426.99  | P. Maloney                            |
| 29th, NW     | N                           | P            | 2.19  | 1883 | 2,966.05  | 6,495.10  | .....do                               |
| 31st, NW     | N                           | P            | ..... | 1882 | 3,338.56  | 5,607.73  | .....do                               |
| Mass. avenue | 6th, NE                     | 8th          | 2.00  | 1880 | 6,749.41  | 16,444.36 | Washington Asphalt Block and Tile Co. |
| Mass. avenue | 1st, NE                     | 2d           | 2.00  | 1893 | 3,960.59  | 11,683.74 | .....do                               |
| Mass. avenue | 8th, NE                     | 11th         | 1.84  | 1895 | 6,398.35  | 13,677.36 | P. Maloney                            |
| Md. avenue   | 1st, NE                     | 4th          | 2.00  | 1887 | 11,535.48 | 26,944.66 | .....do                               |
| 6th, NE      | 6th, NE                     | 11th         | 2.00  | 1889 | 14,950.90 | 39,633.96 | .....do                               |
| Md. avenue   | 11th, NE                    | 13th         | 2.00  | 1890 | 8,268.53  | 22,965.91 | .....do                               |

Minor repairs, 1897, 0.062 cent; 1893 0.061 cent; 1897, 0.75 cent per square yard of total area.

Resurfaced by Cranford, 1893-94; cost \$8,680.41.

Paid by property owners.

Resurfaced by Cranford, 1893-94; cost \$4,601.78.  
Resurfaced by Cranford, 1893-94; cost \$4,227.15.

*Asphalt block pavements—Continued.*

| Street.            | From—                        | To—        | Price<br>per<br>yard. | Year<br>laid. | Square<br>yards. | Original<br>cost. | Contractor.                                   | Remarks. |
|--------------------|------------------------------|------------|-----------------------|---------------|------------------|-------------------|-----------------------------------------------|----------|
| Md. avenue .....   | 13th, NE .....               | 15th ..... | \$2.00 .....          | 1891 .....    | 9,635.10 .....   | \$24,839.83 ..... | P. Maloney .....                              |          |
| Mo. avenue .....   | 4 $\frac{1}{2}$ th, NW ..... | 6th .....  | 2.00 .....            | 1894 .....    | 1,371.22 .....   | 4,745.17 .....    | Washington Asphalt Block and<br>Tile Co. .... |          |
| N. C. avenue ..... | 3d, SE .....                 | 6th .....  | 2.00 .....            | 1890 .....    | 5,032.66 .....   | 12,450.60 .....   | P. Maloney .....                              |          |
| N. C. avenue ..... | 6th, SE .....                | 8th .....  | 2.00 .....            | 1891 .....    | 6,377.84 .....   | 15,714.70 .....   | do .....                                      |          |
| N. C. avenue ..... | 8th, SE .....                | 11th ..... | 2.00 .....            | 1892 .....    | 6,479.79 .....   | 18,185.64 .....   | do .....                                      |          |
| S. C. avenue ..... | 6th, SE .....                | 7th .....  | 2.00 .....            | 1891 .....    | 3,287.74 .....   | 9,214.01 .....    | do .....                                      |          |



*Estimate of cost of completing so much of the project for sewage disposal as will permit the abandonment of James Creek Canal. (October 19, 1898.)*

|                                                                                                  |              |
|--------------------------------------------------------------------------------------------------|--------------|
| Intercepting sewer in Four-and-a-half street .....                                               | \$112,550.10 |
| Completion of Tiber Creek and New Jersey avenue high-level intercepting sewer .....              | 263,511.50   |
| B street and New Jersey avenue trunk sewer between pumping station and Seventh street west ..... | 543,917.20   |
| Pumping station .....                                                                            | 602,250.00   |
| Total .....                                                                                      | 1,522,228.80 |

This canal now receives the sewage from 2,256 acres of land within the city, and from 1,344 acres of land outside of Florida avenue, by means of the Tiber sewer, its tributaries, and the smaller sewers below the Tiber sewer outlet. It will be necessary to complete the Tiber Creek and New Jersey avenue high-level intercepting sewer. This will intercept the sewage in the Tiber sewer above the crossing of Indiana avenue.

The B street and New Jersey avenue trunk sewer, from the intersection of Seventh and B streets NW. to the site of the proposed pumping station, must be constructed. This sewer is required to intercept the sewage from the lower grounds adjacent to Pennsylvania and Garfield avenues. The Four-and-a-half street intercepting sewer and the M street intercepting sewer, between Four-and-a-half street and New Jersey avenue, are required to intercept the sewage from a large section of South Washington. The pumping station, at the lower end of New Jersey avenue, with the necessary tide gates, screen chambers, and pumping machinery, will be required for the discharge of the sewage into the Anacostia River.

*Estimate of cost of sewage-disposal project. (October 19, 1898.)*

|                                                                       |              |
|-----------------------------------------------------------------------|--------------|
| Rock Creek and B street intercepting sewer .....                      | \$377,887.80 |
| Appropriation made .....                                              | 190,000.00   |
| Required for completion .....                                         | \$187,887.80 |
| Extension of northeast boundary sewer, not in estimate of board ..... | 190,000.00   |
| East side intercepting sewer:                                         |              |
| To Twelfth street east, estimate of board .....                       | 85,467.80    |
| From Twelfth street east, eastward, not in estimate of board .....    | 180,000.00   |
| Water and M streets intercepting sewer .....                          | 162,173.60   |
| Four-and-a-half street sewer .....                                    | 112,550.10   |
| Tiber Creek and New Jersey avenue sewer .....                         | \$483,511.50 |
| Appropriation made .....                                              | 220,000.00   |
| Required for completion .....                                         | 263,511.50   |
| B street and New Jersey avenue trunk sewer .....                      | 719,101.30   |
| Outlet to old B street sewer .....                                    | 30,716.00    |
| Pumping station (\$627,250, appropriation of \$25,000) .....          | 602,250.00   |
| Outfall sewer, inverted siphon and outlet .....                       | 679,376.90   |
| Dikes .....                                                           | 44,600.00    |
| Required for completion .....                                         | 3,257,635.00 |

NOTE.—The above estimate is compiled from the estimates of the "board of sanitary engineers, 1890," with the exceptions noted, and is intended to cover the cost of completion of the project.

|                                               |              |
|-----------------------------------------------|--------------|
| Appropriations made:                          |              |
| Easby Point sewer .....                       | \$250,000.00 |
| Fifteenth and F streets sewer .....           | 87,000.00    |
| Rock Creek and B street sewer .....           | 190,000.00   |
| Tiber Creek and New Jersey avenue sewer ..... | 220,000.00   |
| Pumping station (plans, etc., for) .....      | 25,000.00    |
| Total .....                                   | 772,000.00   |

Appropriations for 1893 to 1899, \$128,666.66 average per year.

Total cost \$4,029,635. At average amount of appropriations it will require twenty-six years, or until 1925, to complete the project.

## Statement of asphalt surface laid over old pavements.

## LAID OVER COBBLE.

| Street.  | From— | To—        | Year laid. | Square yards. | Cost.      | Cost per square yard. | Price of asphalt, new pavements.                     | Repairs. | Present condition. | Contractor. |
|----------|-------|------------|------------|---------------|------------|-----------------------|------------------------------------------------------|----------|--------------------|-------------|
| Prospect | 32d   | Potomac    | 1891       | 2,113.19      | \$3,886.09 | \$1.84                | \$2.00                                               | None     | Good               | Barber Co.  |
| 20th, NW | R     | S          | 1890       | 1,904.64      | 3,463.42   | 1.73                  | { 2.25<br>2.00 }                                     | do       | do                 | Do.         |
| E, NW    | 13d   | 15th       | 1889       | 3,030.84      | 4,896.93   | 1.61                  | 2.00                                                 | \$5.77   | do                 | Do.         |
| 9th, SW  | B     | C          | 1889       | 1,435.73      | 2,381.48   | 1.59                  | 2.00                                                 | 2.10     | do                 | Do.         |
| 8th, SW  | B     | C          | 1890       | 1,434.14      | 2,466.70   | 1.73                  | 2.00                                                 | None     | do                 | Do.         |
| 22d, NW  | F     | G          | 1892       | 1,257.06      | 2,187.98   | 1.74                  | { 2.00 (4-inch)<br>2.25 (4-inch)<br>1.93 (4-inch) }  | do       | do                 | Do.         |
| F, NW    | 22d   | Va. avenue | 1893       | 1,308.44      | 2,277.13   | 1.70                  | { 2.10 (4-inch)<br>2.185 (4-inch)<br>1.90 (4-inch) } | do       | do                 | Do.         |
| K, NW    | 1st   | 3d         | 1894       | 3,984.36      | 6,717.98   | 1.68                  | { 2.10 (4-inch)<br>1.68 (4-inch)<br>2.00 (4-inch) }  | do       | do                 | Thomas.     |
| 28th, NW | M     | Dumbarton  | 1894       | 2,877.14      | 4,492.46   | 1.56                  | { 2.00 (4-inch)<br>1.53 (4-inch)<br>1.68 (6-inch) }  | do       | do                 | Do.         |
| D, NW    | 14th  | 15th       | 1895       | 1,675.02      | 2,804.14   | 1.67                  | { 1.53 (4-inch)<br>1.68 (6-inch) }                   | do       | do                 | Do.         |

## LAID ON ASPHALT BLOCK.

|          |            |              |      |          |            |        |                                                      |         |      |           |
|----------|------------|--------------|------|----------|------------|--------|------------------------------------------------------|---------|------|-----------|
| H, NW, a | Vt. avenue | Conn. avenue | 1888 | 2,603.56 | \$3,859.48 | \$1.48 | \$2.00                                               | \$12.61 | Fair | Cranford. |
| 20th, NW | Dumbarton  | P            | 1893 | 2,045.84 | 3,015.92   | 1.50   | { 1.84 (4-inch)<br>2.185 (6-inch)<br>1.83 (4-inch) } | None    | Good | Do.       |
| 31st, NW | N          | P            | 1893 | 2,937.25 | 4,227.15   | 1.43   | { 2.185 (6-inch)<br>1.90 (4-inch)<br>2.10 (6-inch) } | do      | do   | Do.       |
| 29th, NW | N          | Dumbarton    | 1894 | 922.96   | 1,584.86   | 1.60   | { 2.10 (6-inch)<br>1.83 (4-inch)<br>2.185 (6-inch) } | do      | do   | Do.       |
| 15th, NW | Pa. avenue | E            | 1893 | 771.91   | 1,084.70   | 1.40   | { 2.185 (6-inch)<br>1.68 (4-inch)<br>2.00 (6-inch) } | do      | do   | Do.       |
| 15th, NW | E          | B            | 1893 | 5,251.72 | 7,595.71   | 1.40   | { 2.185 (6-inch)<br>1.68 (4-inch)<br>2.00 (6-inch) } | do      | do   | Do.       |
| N, NW    | 28th       | 30th         | 1896 | 1,604.39 | 2,409.31   | 1.50   | { 1.68 (4-inch)<br>2.00 (6-inch)<br>2.00 (6-inch) }  | do      | do   | Do.       |
| 4th, SE  | E. Capitol | Pa. avenue   | 1896 | 3,445.94 | 5,251.18   | 1.52   | { 1.68 (4-inch)<br>2.00 (6-inch)<br>2.00 (6-inch) }  | do      | do   | Do.       |

## LAID ON MACADAM.

|                                   |                 |           |            |           |              |        |                                      |          |            |            |
|-----------------------------------|-----------------|-----------|------------|-----------|--------------|--------|--------------------------------------|----------|------------|------------|
| I, NW .....                       | Pa. avenue..... | 23d ..... | 1891 ..... | 6, 295.58 | \$10, 035.70 | \$1.60 | { \$2.00 (4-inch) }<br>2.25 (6-inch) | None ... | Good ..... | Barber Co. |
| 1st, NW .....                     | R .....         | S .....   | 1892 ..... | 1, 696.99 | 2, 904.19    | 1.71   | { 2.00 (4-inch) }<br>2.25 (6-inch)   | do ..... | do .....   | Do.        |
| North side of Lincoln square..... |                 |           | 1894 ..... | 4, 076.51 | 6, 870.33    | 1.70   | { 1.90 (4-inch) }<br>2.10 (6-inch)   | do ..... | do .....   | Thomas.    |

## LAID ON GRANITE BLOCK.

|               |           |           |            |        |             |        |                                           |               |            |         |
|---------------|-----------|-----------|------------|--------|-------------|--------|-------------------------------------------|---------------|------------|---------|
| D, NW .....   | 8th ..... | 9th ..... | 1895 ..... | 935.54 | \$1, 288.99 | \$1.38 | { \$1.53 (4-inch) }<br>1.68 (6-inch)      | None ...      | Good ..... | Thomas. |
| 6th, NW ..... | F .....   | G .....   | 1895 ..... | 975.18 | 780.14      | .80    | Bermudez binder laid as<br>an experiment. | Badly worn... | Do.        |         |

a H street NW., between Vermont avenue and Connecticut avenue, was surfaced with coal-tar distillate, on which the contractor made extensive repairs during the guarantee period. It is now in fair condition.



# REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT.

## SECOND DIVISION.

(Capt. L. H. BEACH,

*Corps of Engineers, United States Army, Assistant to the Engineer Commissioner, in charge until May 31, 1898.)*

|                                                             |                               |
|-------------------------------------------------------------|-------------------------------|
| STREETS, PAVEMENTS, GRADES, AND CONSTRUCTION OF ROADS..     | CONWAY B. HUNT,               |
| SIDEWALKS AND ALLEYS .....                                  | H. N. MOSS,                   |
| MAINTENANCE OF COUNTY ROADS.....                            | GEORGE N. BEALE,              |
| CONSTRUCTION AND CARE OF BRIDGES .....                      | GEORGE H. BAILEY,             |
| SEWER CONSTRUCTION AND MAINTENANCE .....                    | D. E. MCCOMB,                 |
| PLUMBING PLANS AND INSPECTION .....                         | CHARLES B. BALL,              |
| INSPECTION OF ENGINEERING MATERIALS AND CARE OF PROP- erty. | C. T. SHOEMAKER,              |
| TESTING OF ENGINEERING MATERIALS .....                      | A. W. DOW,                    |
| PERMITS.....                                                | H. M. WOODWARD, Permit Clerk. |

## REPORT OF THE COMPUTING ENGINEER.

WASHINGTON, D. C., July 1, 1898.

CAPTAIN: I have the honor to report the following as the operations of the surface division for the fiscal year ended June 30, 1898:

*Summary statement of work done under appropriations for "Improvements and repairs" and "Construction of county roads and suburban streets."*

|                                    | Improve-<br>ments and<br>repairs. | County<br>roads. | Total.     |
|------------------------------------|-----------------------------------|------------------|------------|
| Asphalt, 6-inch base .....         | 40,078.81                         | 15,593.62        | 55,672.43  |
| Asphalt block .....                | 18,234.93                         | 4,448.27         | 22,683.20  |
| Granite block .....                | 4,416.00                          |                  | 4,416.00   |
| Macadam roadway .....              | 11,221.04                         | 14,186.45        | 25,407.49  |
| Gravel roadway .....               |                                   | 27,060.26        | 27,060.26  |
| Grading (ordinary) .....           | 17,786.26                         | 101,490.78       | 119,277.04 |
| Grading (macadam) .....            | 2,924.60                          | 2,435.27         | 5,359.87   |
| Old cobble removed .....           | 32,425.38                         | 4,484.64         | 36,910.02  |
| Old curb removed .....             | 16,924.70                         | 4,068.00         | 20,992.70  |
| Curb reset .....                   | 15,939.40                         | 2,681.39         | 18,620.79  |
| Curb set .....                     | 21,364.60                         | 6,879.61         | 28,244.21  |
| Vitrified-block gutters .....      | 5,192.63                          | 2,383.76         | 7,576.39   |
| Cobble gutters and crossings ..... |                                   | 14,340.63        | 14,340.63  |

The detailed statements are given in Tables A and B.

The work under "Repairs to concrete pavements" is shown by Table C.

Resurfacing has been confined to original coal-tar pavements, which are thenceforth considered as asphalt pavements.

The old pavements on a portion of New York avenue, Seventeenth, Eighteenth, and G streets, SW., and Pennsylvania avenue, amounting to 13,257 square yards, were removed and standard asphalt pavements laid. In most cases this was necessary in order to preserve or improve the grade and to prevent an undue elevation of the surface, which is the result of resurfacing over coal-tar pavements. In other cases the old bituminous base was so weak and rotten that the pavements were rapidly going to pieces.

Table D shows the character and extent of street pavements, and Table E gives the mileage. Included in these is the pavement laid in suburban subdivisions by property owners in Eckington, Petworth, Washington Heights, and Tunlaw Heights, amounting to 69,471 square yards. These pavements have never been formally accepted, but, having cost the District nothing, the least that can be expected will be that they be kept in repair at public expense.

All asphalt pavements have been laid with Trinidad asphalt, excepting the following, laid with Bermudez asphalt:

*Bermudez asphalt laid by Thomas H. Thomas.*

| Street.                        | From—                          | To—            | 4-inch base.  | 6-inch base.  | On cobble.    | On macadam.   | On granite.   | Binder, on granite. |
|--------------------------------|--------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------------|
|                                |                                |                | <i>Yards.</i> | <i>Yards.</i> | <i>Yards.</i> | <i>Yards.</i> | <i>Yards.</i> | <i>Yards.</i>       |
| S NW.....                      | New Hampshire avenue.          | Twentieth..... |               | 5,195         |               |               |               |                     |
| Do.....                        | Seventh.....                   | Florida avenue |               | 4,539         |               |               |               |                     |
| E SE.....                      | Between Twelfth and Thirteenth |                | 618           |               |               |               |               |                     |
| Twenty-eighth M.....           | North Capitol.....             | Second.....    | 1,551         |               | 2,877         |               |               |                     |
| North side Lincoln square..... |                                |                |               | 5,486         |               |               |               |                     |
| K NW.....                      | First.....                     | Third.....     |               |               |               | 4,077         |               |                     |
| D NW.....                      | Fourteenth.....                | Fifteenth..... |               |               | 3,984         |               |               |                     |
| Do.....                        | Eighth.....                    | Ninth.....     |               |               | 1,675         |               | 936           |                     |
| Sixth NW.....                  | F.....                         | G.....         |               |               |               |               |               | 975                 |
| Total.....                     |                                |                | 2,169         | 15,220        | 8,536         | 4,077         | 936           | 975                 |

Table F shows work done at the cost of the various street railway companies.

Table G shows the length of street railways in the District.

The details of character and extent of street pavements to this date are shown by Table H.

The appropriation for "Repairs to streets, avenues, and alleys" was \$30,000, as in former years. A departure from former practice in its expenditure was inaugurated by the improvement of a number of roadways by resurfacing with macadam and gravel under the constant service of a steam roller. The following roadways were thus improved. The other details of the expenditure of the appropriation are given in the report of the superintendent of streets.

*Statement of streets spiked, rolled, and graveled.*

| Location.                                                                | Square yards. |
|--------------------------------------------------------------------------|---------------|
| Eleventh street NE., between D and E streets.....                        | 980           |
| B street NE., between Tenth and Twelfth streets.....                     | 2,032         |
| Thirty-seventh street NW., between Back street and Wisconsin avenue..... | 350           |
| Florida avenue, between W and Champlain avenue.....                      | 1,950         |
| Back street and Thirty-seventh intersection.....                         | 444           |
| Florida avenue, between Fourteenth and Fifteenth streets.....            | 3,040         |
| K street SW., between First and Four-and-a-half streets.....             | 6,130         |
| I street SW., between Sixth and Seventh streets.....                     | 1,544         |
| L street SE., between Third street and New Jersey avenue.....            | 3,400         |
| Florida avenue, between Twelfth and Fourteenth streets.....              | 4,754         |
| Grant avenue, between Seventh street and Sherman avenue.....             | 4,500         |
| Total.....                                                               | 29,124        |

As an incident to the expenditure, by contract, of the bulk of the appropriation for "Improvement and repairs," "Repairs to concrete pavements," and "Construction of county roads," and on account of other appropriations not under the control of the surface division, there were executed miscellaneous items of work by day

labor during the year, as shown in detail in Statement N. This work amounted to \$16,754.80.

In Statement P is given the details of repairs to cuts made by plumbers and by corporations and District employees, and a comparative statement of the number and cost of plumber cuts made in preceding years.

The statement of the number of inspectors, overseers, and other employees temporarily required is as follows:

*Assistant engineers, inspectors, foremen, and other employees of the surface division and engineers' stable temporarily required and appropriations from which paid for year ending June 30, 1898.*

| Class.                   | No. | Repairs to concrete pavements. | Repairs to county roads. | Construction of county roads. | Assessment and permit work. | Side-walk and curb. | Improvements and repairs. | Ordinary care of bridges. | Construction and repair of bridges. |
|--------------------------|-----|--------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|---------------------------|---------------------------|-------------------------------------|
| Assistant engineers..... | 3   |                                | \$577.40                 | \$1,347.36                    | \$462.10                    |                     |                           | \$500.00                  | \$1,500.00                          |
| Inspectors.....          | 22  | \$296.00                       |                          | 2,118.25                      | 1,798.00                    |                     | \$3,176.75                |                           |                                     |
| Foremen.....             | 13  | 116.00                         | 3,492.00                 | 582.00                        | 2,619.00                    | \$96.00             | 698.00                    | 106.00                    | 900.00                              |
| Other employees.....     | 609 | 9,171.71                       | 28,206.44                | 6,006.26                      | 23,260.66                   | 857.82              | 11,185.76                 | 1,458.48                  | 5,888.53                            |
| Total.....               |     | 9,583.71                       | 32,275.84                | 10,053.87                     | 28,139.76                   | 953.82              | 15,060.51                 | 2,064.48                  | 8,288.53                            |

| Class.                   | Widening P street bridge. | Bridge over Rock Creek. | Emergency fund. | Engine houses. | Special repairs to market houses. | Various deposits. | Act to prevent scarlet fever. | Current repairs to streets, avenues, and alleys. | Total.     |
|--------------------------|---------------------------|-------------------------|-----------------|----------------|-----------------------------------|-------------------|-------------------------------|--------------------------------------------------|------------|
| Assistant engineers..... | \$100.00                  |                         |                 |                |                                   |                   |                               |                                                  | \$4,486.86 |
| Inspectors.....          |                           |                         |                 |                |                                   | \$864.00          |                               |                                                  | 8,253.00   |
| Foremen.....             | 8.00                      | \$40.00                 | \$80.00         | \$12.00        | \$4.00                            |                   | \$8.00                        | \$2,910.00                                       | 11,671.00  |
| Other employees.....     | 67.75                     | 313.82                  | 667.13          | 183.00         | 30.85                             | 63.82             | 96.20                         | 23,070.69                                        | 110,528.92 |
| Total.....               | 175.75                    | 353.82                  | 747.13          | 195.00         | 34.85                             | 927.82            | 104.20                        | 25,980.69                                        | 134,939.78 |

The labor incident to the proper compilation of this statement is very great, due to the opinion adhered to for several years that laborers on the work were to be included as "other employees." I am confident that such is not the intent of the law, which has been repeated annually for many years in the appropriation acts. It is believed that the employees referred to are those, of whatever designation, temporarily required for the laying out, inspection, overseeing, and executive control of the work in the office and field, and it is hoped that future appropriation acts will be either so construed or their phraseology conformed to their intent.

The reports of the engineer of bridges, superintendent of streets, and superintendent of roads are transmitted herewith.

It is believed that the policy pursued by the office during the past year of excluding macadam and gravel roadway pavements from streets added to the schedule of work submitted in the yearly Books of Estimates, is sound and should be perpetuated. The proper materials for this class of work are such as are best suited to the street and its traffic, and it is certain that a sheet or block pavement offers every advantage. A roadway improved with macadam or gravel is found in a short time again pressing for a place on the list of streets to be paved. Once paved with proper regard to its requirements, it is eliminated from future similar consideration. The graveling and macadamizing of any roadways can promptly and properly be provided for a comparatively moderate cost from the repair appropriation should the policy be encouraged of thus repairing a roadway where new curb and sidewalks have been provided under the assessment system. The advantage of this is double, in that the property owners are encouraged by the offer of road repairs to make free use of the assessment system in localities that might otherwise hesitate to seek improvement involving assessment; while the road improvement is always an advantage, often a necessity, in the protection of the new curb and sidewalk work. Under such circumstances much good can be accomplished with comparatively slight expenditure.

It has been in every way advantageous in the construction of gravel and macadam roadways to execute the work by day labor. This practice has been followed as far as possible. The advantage is real and based on experience. A requirement of the organic act provides for a five-year guaranty on all new work done by contract, and during that time no public funds can be expended on the street. The practical fact is that the necessary repairs to such a roadway are frequently such as are due

to causes such as will not permit the contractor to be called upon for their repair. The history of such efforts has been allegation and contradiction as to the cause of defects and the responsibility for such causes, with often the enforced admission that natural causes have resulted in defects and injuries whose repair can not be exacted under the guaranty. At the same time their correction from public funds is unlawful, though at trifling cost, and thus, between two conditions, the roadway continues until the five-year period expires, when the repairs originally indicated become a charge, at an increased cost, upon the appropriation for such work, the public having, meanwhile, lost the fullest advantage that would result from the maintenance of the roadway in the best condition. Were it possible to waive the five-year guarantee clause as to macadam or gravel roadways, their construction by contract would be indicated; but, in default, the greatest advantage results from the purchase and delivery of the material by contract, and its construction into a roadbed by day labor, and this course is the one now followed. The fact that the District owns the steam rollers proper for such work, while local contractors do not, is a further advantage of this method.

In the selection of the material for roads it has been recognized that the local macadam material is almost all of inferior quality, some worse than others. While suitable for the body of the road, nothing like in quality to trap rock has hitherto been available for a top layer within the range of justifiable cost. Continued efforts to secure such material are likely to result in far-reaching good. For the repair of the surface of old macadam and gravel roads, and as a binder course (mixed with bank gravel) for new macadam, the use of screened or washed gravel is giving increased satisfaction. While somewhat expensive, the quantity necessary to be used is so moderate on a given piece of work that economy, in view of the excellent results secured, can fairly be claimed. A good, and fairly permanent, surface has even been secured by the use of this material spread to a depth of  $1\frac{1}{2}$  inches on a dirt road, watered and rolled, but this was exceptional and is not advocated as a construction. The usual course in repairing macadam and gravel roads, when general treatment is necessary, is to remove all dirt from the road, then to spike the surface with the steam roller thoroughly. The spiked surface is then worked over with a heavy harrow, made for the work, as nothing bought in the local markets would stand the strain. The roadway material is then shaped so as to provide proper crown and transverse grade, and it is frequently necessary to provide additional material to supply losses due to wear. The steam roller now thoroughly compacts the material, and a top dressing of screened gravel, or that mixed with bank gravel, should binding material be defective, is then spread and rolled, which completes the repair. The roller is preceded by a watering cart to insure compaction. When the road to be repaired is of earth, or little better than earth, the spiking and harrowing are omitted. Advantage is taken of the removal of old material from asphalt roadways torn up for repairs to construct therefrom a class of roadway, using the methods just described, equal to the best macadam construction and at nominal cost in comparison thereto.

The designation of 6 by 20 inch curb as "standard" and of 8 by 8 inch as "special" has been eliminated from the past year's specifications. The 8 by 8 inch curb is yearly increasing its advantage over others, and the terms eliminated were misleading and false. In ground liable to settlement, however slight, such as would require the resetting of curb, or where neither roadway or pavement construction is likely to be soon placed against the new curb, the use of 6 by 20 inch curb is indicated, but otherwise the 8 by 8 inch, set on a concrete base, makes a finer appearance and is generally preferred. The cost per foot is practically the same.

Efforts to construct artificial curb have not lead to results that would indicate that it offers advantages of economy or otherwise over equivalent construction of the standard granite types. In the setting and resetting of curb, especially in the city limits, the necessity of cutting and trimming the roots of trees is of constant occurrence, and has often necessitated the reduction of a roadway's width from a former establishment to prevent injury to the trees.

The use of vitrified block in the gutters of asphalt roadways to a uniform width of about 26 inches, without toothing into the asphalt, is now the approved construction in surface work. Such construction may be omitted on steep grades, but the economy is trifling.

In connection with the circumstance that in this year's list of sheet roadways has been included for the first time about 70,000 square yards heretofore laid by private individuals in the development of suburban properties, the fact is recalled and emphasized that a sheet roadway must have a certain amount of travel to prevent rapid deterioration. The lack of this is evidenced in several of these but-little-used streets.

In the resurfacing of sheet and asphalt-block roadways which are beyond economical minor repair, a special care is given to the correction of deficiencies of longitudinal and transverse grade often found in the original pavement, whose condition is then largely due to such defects. In order to secure such correction within the limits of reasonable cost and under the restrictions of other constructions, which



prevent any but the most moderate change of elevation at any one point, the adherence at times to minimum rates of grade become necessary, and the consequent occasion arises for refinement of care in adherence strictly thereto in construction in order to preserve drainage conditions at every point. The uniformly good results obtained are reasons for much satisfaction with the methods used.

No new granite-block pavements are now laid and no vitrified-block roadways were laid during the past year.

The roadways heretofore specified as laid with Bermudez asphalt give every reason, by their condition, for great satisfaction with that material.

The specifications for sheet asphalt and asphalt-block roadways have been rewritten, in the view of continued experience, and are believed to be now abreast with the latest requirements.

The details of character and extent of street-roadway pavements, as given in Table II, have been carefully rewritten for this year's report, and reliance can be placed in the accuracy of its statements.

The extent of cement-sidewalk work done during the past year exceeded all former experience, due largely to the unprecedentedly low price bid for such work, which approximated the cost of brick walks. In consequence but little of the latter was laid. The details of work incident to cement-sidewalk work are very great, and unremitting care is required to avoid errors and omissions. The nature of the construction requires precision in location beyond what is usually permissible, and its permanent nature necessitates the anticipation of incidental details to an extreme degree. A request for such a walk is followed by an inspection and estimate in writing. Should this result in an order for the work, either under the assessment or permit system, the surveyor is notified to prevent loss of points of reference in the walk; the plumbing inspector, the superintendents of the sewer and water divisions, and the various gas, telephone, and electric light companies are called upon to execute any anticipated underground construction prior to the laying of the walk. A field party then stakes out the work, carefully considering its line and grade in the light of the construction's permanent character. Encroachments of structures within the space of the walk are ordered to be removed and necessary adjustments of private copings, areas, etc., are secured, either by oral notification or by formal action through the building inspector. The adjustment to grade of plumbing appurtenances in the walk are executed by a District plumber; the curb is set or reset and the walk laid by the contractor, each process under inspection from this office; the tree spaces, if new ones are necessitated, being marked out prior to the work by the parking commission. Frequently the adjustment to line and grade of manhole tops, fire hydrants, lamp-posts, and analogous constructions, and the removal or moving of telegraph and other similar poles are required and the departments charged with such work are called upon. The adjustment and reconstruction of old and the construction of the necessary new sewer catch-basins is a constant necessity which must be anticipated. After the construction of the walk its area is carefully measured, its location and extent plotted and recorded, its cost, including incidentals, determined and settlement made therefor with the contractor, and the office records are then forwarded to the accounting officers for adjustment either by rebate or assessment.

The grading and paving of alleys is conducted under the same system as the laying of sidewalks and setting of curb, but rarely are applications under the permit system received. It is generally the case that a survey for the work of paving an alley discovers a number of encroachments of private structures on public space, sometimes to a large extent. Occasionally entire buildings are found to have been constructed within or over the area of a public alley. It is not usual in the correction of these conditions to resort to litigation, as a formal notice, with reasonable insistence upon the removal of the structure, is generally successful in securing the removal of the encroaching building or fence, but occasions have arisen where the work of paving has been suspended and extreme measures inaugurated to secure public rights of occupancy.

In paving alleys the materials used during the past year, as in other recent years, have been vitrified and asphalt block. An innovation in the vitrified-block pavements has been the introduction at intervals of about 60 feet in the length of the alley pavement of expansion joints filled with asphaltic cement in order that temperature changes may be taken up at those points. Asphalt-block pavements do not require this construction, as their nature is sufficiently elastic to be dispensed with.

In the face of peculiar drawbacks the office and field work of the surface division during the past year have been carried on, it is believed, in a satisfactory manner, and my acknowledgments are due to the force engaged for the work accomplished.

Respectfully submitted.

C. B. HUNT, *Computing Engineer.*

To Capt. LANSING H. BEACH,

*Corps of Engineers, U. S. A., Engineer Commissioner, D. C.*

## REPORT OF THE SUPERINTENDENT OF STREETS.

WASHINGTON, D. C., *July 1, 1898.*

CAPTAIN: I have the honor to submit herewith the following annual report for the fiscal year ended June 30, 1898:

The appropriation for "Current repairs to streets, avenues, and alleys" was \$30,000; of this amount there was expended \$29,955.38. (See Statement I.)

During the year there were 2,004 dangerous holes repaired, aggregating 10,314 square yards, at a total cost of \$4,969.50.

Statement K is a list of the work done under the permit system, under which system the property owners requesting the improvements pay one-half the total cost, the District paying the other half.

Under the act of Congress of August 7, 1894, the Commissioners of the District of Columbia are empowered, whenever, in their judgment, the public health, safety, or comfort require it, to improve and repair alleys and sidewalks and pay the total cost out of the appropriation for "Assessment and permit work." One-half the cost of the work ordered under the assessment system is charged against the abutting property and becomes a lien upon said property. Statement L gives a list of the work which was done under the assessment system, the total amount of which is \$159,976.31.

The appropriation for "Replacing curbs and sidewalks around public reservations" was \$5,000, which was entirely expended. For list of the work done under this appropriation see Statement M.

Statement O gives a list of work done for parties, which work is for their sole benefit, and which is paid for entirely by them. This work amounted to \$694.78.

Respectfully submitted.

H. N. MOSS, *Superintendent of Streets.*

To Capt. LANSING H. BEACH,

*Corps of Engineers, U. S. A., Engineer Commissioner, D. C.*

(Through the Computing Engineer.)

of street improvements, 1896

NORTHWEST.

| t       | Circular<br>curb<br>reset. | Circular<br>curb set. | Straight<br>curb set. | cost<br>feet. | Name of contractor.       |
|---------|----------------------------|-----------------------|-----------------------|---------------|---------------------------|
|         |                            |                       |                       |               |                           |
| t.      | Lin. feet.                 | Lin. feet.            | Lin. feet.            |               |                           |
| 3       | -----                      | 13.67                 | 1,437.07              | 3.56          | Cranford Paving Co.       |
| I.      | -----                      | -----                 | 1,762.52              | 6.02          | Do.                       |
| Tenth   | -----                      | 10.70                 | 308.81                | 3.06          | Do.                       |
| C.      | -----                      | 6.29                  | 580.46                | 5.58          | Barber Asphalt Paving Co. |
| Elevent | -----                      | 39.95                 | 759.02                | 5.37          | Do.                       |
| Twelfth | -----                      | 37.85                 | 103.97                | 2.87          | Do.                       |
| Elevent | -----                      | 72.17                 | 1,893.26              | 8.52          | Cranford Paving Co.       |
| Twenty  | -----                      | 46.90                 | 772.60                | 6.97          | Do.                       |
| T.      | -----                      | 21.91                 | 377.06                | 0.38          | Barber Asphalt Paving Co. |
| Rhode   | -----                      | -----                 | 807.70                | 0.39          | Cranford Paving Co.       |
| H.      | -----                      | -----                 | 46.70                 | 3.61          | Do.                       |
| North C | 75.45                      | -----                 | -----                 | -----         | -----                     |

UTHWEST.

|          |       |       |          |       |                                       |
|----------|-------|-------|----------|-------|---------------------------------------|
| Third    | ----- | ----- | 139.49   | 6.76  | Barber Asphalt Paving Co.             |
| Six and  | ----- | ----- | 1,114.08 | 9.06  | Washington Asphalt Block and Tile Co. |
| Virginia | ----- | ----- | 268.36   | 3.09  | Barber Asphalt Paving Co.             |
| N.       | ----- | ----- | 450.11   | 7.00  | Do.                                   |
| Van      | ----- | ----- | 1,197.11 | 14.59 | Washington Asphalt Block and Tile Co. |

OUTHEAST.

|         |       |       |       |       |                                       |
|---------|-------|-------|-------|-------|---------------------------------------|
| E.      | ----- | ----- | ----- | 3.16  | Cranford Paving Co.                   |
| Fourth  | ----- | ----- | 794.2 | 3.53  | Washington Asphalt Block and Tile Co. |
| Ninth   | ----- | ----- | 446.5 | 9.73  | Do.                                   |
| D.      | ----- | ----- | 400.3 | 18.50 | Do.                                   |
| South C | ----- | ----- | ----- | 0.78  | Warren F. Brenizer.                   |

ORTHEAST.

|         |       |       |         |       |                                       |
|---------|-------|-------|---------|-------|---------------------------------------|
| F.      | ----- | ----- | 3,517.6 | 36.70 | Cranford Paving Co.                   |
| Florida | ----- | ----- | -----   | 3.01  | Gaskins & Horn.                       |
| Tenth   | ----- | ----- | 793.1   | 71.77 | Washington Asphalt Block and Tile Co. |
| Morris  | ----- | ----- | -----   | 3.60  | Do.                                   |
| Fourth  | ----- | ----- | -----   | 15.22 | Cranford Paving Co.                   |

FORGETOWN.

|        |       |       |       |       |       |                           |
|--------|-------|-------|-------|-------|-------|---------------------------|
| M.     | 83    | 62.44 | 84.19 | 155.2 | 36.34 | Barber Asphalt Paving Co. |
| Twenty | ----- | ----- | 125   | 2,771 | 48.94 | Day labor.                |
| M.     | 90    | ----- | 15.71 | ----- | 32.61 | Barber Asphalt Paving Co. |

Pressed brick.

## REPORT OF THE SUPERINTENDENT OF STREETS.

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Respectfully submitted.

H. N. MOSS, *Superintendent of Streets.*

To Capt. LANSING H. BEACH,

*Corps of Engineers, U. S. A., Engineer Commissioner, D. C.*

(Through the Computing Engineer.)

| Street.                  | From—                    | To—                        | Kind of pavement.         | Number of contract. | Square yards. | Price per yard. | Ordinary grading. | <i>Cu. yards.</i> |
|--------------------------|--------------------------|----------------------------|---------------------------|---------------------|---------------|-----------------|-------------------|-------------------|
| I.....                   | Twenty-third.....        | Twenty-sixth.....          | Asphalt, 6-inch base..... | 2489                | 2,946.38      | \$1.54          |                   |                   |
| Tenth.....               | D.....                   | E.....                     | do.....                   |                     | 2,375.50      | 1.75            |                   | 550               |
| C.....                   | Eleventh.....            | Twelfth.....               | do.....                   | 2489                | 799.56        | 1.55            |                   | 158               |
| Eleventh.....            | C.....                   | D.....                     | do.....                   | 2491                | 1,724.33      | 1.55            |                   | 670               |
| Twelfth.....             | C.....                   | D.....                     | do.....                   | 2491                | 1,713.17      | 1.55            |                   | 396.16            |
| Eleventh.....            | B.....                   | C.....                     | do.....                   | 2491                | 1,820.56      | 1.55            |                   | 384               |
| Twenty-fifth.....        | H.....                   | K.....                     | do.....                   | 2489                | 3,222.92      | 1.54            |                   | 374               |
| T.....                   | Seventh.....             | Florida avenue.....        | do.....                   | 2489                | 1,131.70      | 1.56            |                   | 182.50            |
| Rhode Island avenue..... | New Jersey avenue.....   | do.....                    | do.....                   | 2491                | 1,043.22      | 1.54            |                   | 280               |
| H.....                   | Twenty second.....       | Twenty-third.....          | do.....                   | 2489                | 1,232.58      | 1.54            |                   | 275.60            |
| North Capitol.....       | O.....                   | Q.....                     | do.....                   | 2489                | 2,233.72      | 1.57            |                   | 738               |
|                          |                          |                            |                           |                     |               |                 |                   |                   |
| Third.....               | I.....                   | K.....                     | Asphalt.....              | 2491                | 1,323.11      | 1.56            |                   | 215               |
| Six and-a-half.....      | D.....                   | E.....                     | Asphalt block.....        | 2477                | 1,477.10      | 1.77            |                   | 580               |
| Virginia avenue.....     | South Capitol.....       | Delaware avenue.....       | Asphalt.....              | 2491                | 1,705.08      | 1.56            |                   | 271               |
| N.....                   | Four-and-a-half.....     | Sixth.....                 | do.....                   | 2491                | 2,000.59      | 1.56            |                   | 314               |
| Van.....                 | Third.....               | Four-and-a-half.....       | Asphalt block.....        | 2477                | 1,177         | 1.77            |                   | 460               |
|                          |                          |                            |                           |                     |               |                 |                   |                   |
| E.....                   | Thirteenth.....          | Fifteenth.....             | Asphalt, 6-inch base..... | 2489                | 3,255.38      | 1.57            |                   | 1,101             |
| Fourth.....              | C.....                   | Virginia avenue.....       | Asphalt block.....        | 2477                | 6,683.51      | 1.77            |                   | 1,210             |
| Ninth.....               | Pennsylvania avenue..... | South Carolina avenue..... | do.....                   | 2477                | 1,247.44      | 1.77            |                   | 290               |
| D.....                   | Sixth.....               | Seventh.....               | do.....                   | 2477                | 1,797.91      | 1.77            |                   | 60                |
| South Capitol.....       | H.....                   | K.....                     | Granite block.....        | 2548                | 4,416         | .61             |                   | 496               |
|                          |                          |                            |                           |                     |               |                 |                   |                   |
| F.....                   | Third.....               | Ninth.....                 | Asphalt.....              | 2489                | 7,079.92      | 1.57            |                   | 1,305             |
| Florida avenue.....      | M.....                   | Brentwood road.....        | Macadam.....              | 2493                | 7,121.04      | .86             |                   | 2,820             |
| Tenth.....               | East Capitol.....        | C.....                     | Asphalt block.....        | 2477                | 4,207.82      | 1.77            |                   | 2,290             |
| Morris.....              | Sixth.....               | Seventh.....               | do.....                   | 2477                | 1,644.15      | 1.77            |                   | 620               |
| Fourth.....              | K.....                   | L.....                     | Asphalt.....              | 2489                | 704.50        | 1.57            |                   | 170               |
|                          |                          |                            |                           |                     |               |                 |                   |                   |
| M.....                   | Thirty-second.....       | Thirty-third.....          | Asphalt, 6-inch base..... | 2491                | 3,101.98      | 1.57½           |                   | 306               |
| Twenty-seventh.....      | M.....                   | P.....                     | Macadam.....              |                     | 4,100         |                 |                   | 2,200             |
| M.....                   | Thirty-first.....        | Thirty-second.....         | Asphalt, 6-inch base..... | 2491                | 664.08        | 1.55            |                   | 66                |

TABLE A.—Schedule of street improvements, 1898.

## NORTHWEST.

| Kind of pavement.    | Number of contract. | Contract work. |                 |                   |                   |                       |                            |                   |                      |                      |                    |                    |                   |                   | Material.                |                  |                   |                          | Cost of material. | Cost of extra work. | Cost of inspection. | Removing sewer traps, water boxes, trees, lamp-posts, etc. | Amount of contract. | Total cost of streets. | Name of contractor. |                           |  |  |
|----------------------|---------------------|----------------|-----------------|-------------------|-------------------|-----------------------|----------------------------|-------------------|----------------------|----------------------|--------------------|--------------------|-------------------|-------------------|--------------------------|------------------|-------------------|--------------------------|-------------------|---------------------|---------------------|------------------------------------------------------------|---------------------|------------------------|---------------------|---------------------------|--|--|
|                      |                     | Square yards.  | Price per yard. | Ordinary grading. | Macadam grading.  | Haul over 2,500 feet. | Old cobble, etc., removed. | Old curb removed. | Straight curb reset. | Circular curb reset. | Circular curb set. | Straight curb set. | Brick relaid.     | Cobble gutters.   | Vitrified block gutters. | Vitrified block. | 8 by 8, straight. | Curb, 6 by 20, straight. |                   |                     |                     |                                                            |                     |                        |                     | Circular.                 |  |  |
|                      |                     |                |                 | <i>Cu. yards.</i> | <i>Cu. yards.</i> |                       | <i>Sq. yards.</i>          | <i>Lin. feet.</i> | <i>Lin. feet.</i>    | <i>Lin. feet.</i>    | <i>Lin. feet.</i>  | <i>Lin. feet.</i>  | <i>Sq. yards.</i> | <i>Sq. yards.</i> | <i>Sq. yards.</i>        | <i>Number.</i>   | <i>Feet.</i>      | <i>Feet.</i>             | <i>Feet.</i>      |                     |                     |                                                            |                     |                        |                     |                           |  |  |
| Asphalt, 6-inch base | 2489                | 2,946.38       | \$1.54          |                   | 410               | 550                   | 272                        | 1,450             | 34.43                |                      | 13.67              | 1,437.07           |                   |                   | 189.22                   | 8,600            | 1,450.69          | 17.16                    |                   | \$871.03            | \$83.48             | \$106.00                                                   | \$327.90            | \$5,645.15             | \$7,033.56          | Cranford Paving Co.       |  |  |
| do                   | 2489                | 2,375.50       | 1.75            | 550               |                   | 550                   | a 2,755                    | 1,828             |                      |                      |                    | 1,762.52           |                   |                   | 468.25                   | 20,000           | 1,647.39          | 134.12                   |                   | 1,260.30            | 1,671.38            | 144.00                                                     | 1,706.47            | 7,473.87               | 12,256.02           | Do.                       |  |  |
| do                   | 2489                | 799.56         | 1.55            | 158               |                   | 158                   |                            | 182               | 12.22                |                      |                    | 1,762.52           |                   |                   | 103.88                   | 4,589            | 316.48            | 11.17                    |                   | 248.59              | 27.67               | 33.00                                                      | 23.54               | 1,690.26               | 2,023.06            | Do.                       |  |  |
| do                   | 2491                | 1,724.33       | 1.55            | 670               |                   | 670                   | 1,882.94                   | 196               | 12.22                |                      |                    | 1,762.52           |                   |                   | 103.88                   | 4,589            | 316.48            | 11.17                    |                   | 248.59              | 27.67               | 33.00                                                      | 23.54               | 1,690.26               | 2,023.06            | Do.                       |  |  |
| do                   | 2491                | 1,713.17       | 1.55            | 396.16            |                   | 396.16                | 1,882.94                   | 196               | 12.22                |                      |                    | 1,762.52           |                   |                   | 103.88                   | 4,589            | 316.48            | 11.17                    |                   | 248.59              | 27.67               | 33.00                                                      | 23.54               | 1,690.26               | 2,023.06            | Do.                       |  |  |
| do                   | 2491                | 1,820.56       | 1.55            | 384               |                   | 384                   | 1,971.44                   | 196               | 12.22                |                      |                    | 1,762.52           |                   |                   | 103.88                   | 4,589            | 316.48            | 11.17                    |                   | 248.59              | 27.67               | 33.00                                                      | 23.54               | 1,690.26               | 2,023.06            | Do.                       |  |  |
| do                   | 2489                | 3,222.92       | 1.54            | 374               | 390               |                       | 1,227                      | 1,960             | 84.29                |                      | 72.17              | 1,893.26           |                   |                   | 516.25                   | 22,204           | 1,895.02          | 72.45                    |                   | 1,386.23            | 516.25              | 78.00                                                      | 197.02              | 6,951.02               | 9,128.52            | Cranford Paving Co.       |  |  |
| do                   | 2489                | 1,131.70       | 1.56            | 182.50            | 200               | 382.50                | 330                        | 745               | 13.35                |                      | 46.90              | 772.60             |                   |                   | 200.47                   | 8,852            | 766.44            | 46.96                    |                   | 568.34              | 114.52              | 32.00                                                      | 15.16               | 2,586.95               | 3,316.97            | Do.                       |  |  |
| do                   | 2491                | 1,043.22       | 1.54            | 280               |                   |                       |                            | 392               | 13.50                |                      | 21.91              | 15.58              |                   |                   | 102.99                   | 4,900            | 382.21            | 17.48                    |                   | 289.69              | 148.68              | 48.00                                                      | 46.42               | 2,027.59               | 2,560.38            | Barber Asphalt Paving Co. |  |  |
| do                   | 2489                | 1,232.58       | 1.54            | 275.60            |                   | 275.60                | 1,420                      | 786               | 21                   |                      | 807.70             |                    |                   |                   | 209.81                   | 9,500            | 957.62            | 62.11                    |                   | 596.30              | 493.65              | 104.00                                                     | 104.08              | 2,802.36               | 4,100.39            | Cranford Paving Co.       |  |  |
| do                   | 2489                | 2,233.72       | 1.57            | 738               | 190               |                       |                            | 46.70             |                      |                      | 46.70              |                    |                   |                   | 301.25                   | 12,925           |                   |                          |                   | 258.50              | 90.85               | 172.00                                                     | 65.22               | 4,267.04               | 4,853.61            | Do.                       |  |  |

## SOUTHWEST.

|               |      |          |      |     |     |     |       |       |          |  |  |          |  |  |        |        |  |          |        |        |        |        |          |          |                           |                           |
|---------------|------|----------|------|-----|-----|-----|-------|-------|----------|--|--|----------|--|--|--------|--------|--|----------|--------|--------|--------|--------|----------|----------|---------------------------|---------------------------|
| Asphalt       | 2491 | 1,323.11 | 1.56 | 215 | 150 | 580 | 360   | 161   | 483.64   |  |  | 139.49   |  |  | 149.22 | 6,700  |  |          | 35.15  | 158.61 | 178.99 | 86.00  | 126.60   | 2,536.56 | 3,086.76                  | Barber Asphalt Paving     |
| Asphalt block | 2477 | 1,477.10 | 1.77 | 580 |     |     | 302   | 1,118 | 18.51    |  |  | 1,114.09 |  |  |        |        |  | 1,084.08 | 37.47  | 660.42 | 68.23  | 82.00  | 336.50   | 3,261.91 | 4,409.06                  | Washington Asphalt Paving |
| Asphalt       | 2491 | 1,705.08 | 1.56 | 271 | 102 |     | 603   | 300   | 1,041.06 |  |  | 268.36   |  |  | 144.45 | 6,107  |  |          | 138.48 | 83.25  | 116.00 | 766.55 | 3,258.81 | 4,363.09 | Barber Asphalt Paving     |                           |
| do            | 2491 | 2,000.59 | 1.56 | 314 |     |     | 2,396 | 365   | 959.11   |  |  | 450.11   |  |  | 300.76 | 13,127 |  |          | 309.24 | 705.93 | 158.00 | 598.21 | 4,125.62 | 5,897.00 | Do.                       |                           |
| Asphalt block | 2477 | 1,177    | 1.77 | 460 |     |     | 67    | 20    | 57.37    |  |  | 1,197.11 |  |  |        |        |  |          | 700.31 |        | 152.00 | 6.00   | 2,476.28 | 3,334.59 | Washington Asphalt Paving |                           |

## SOUTHEAST.

|                      |      |          |      |       |       |       |       |       |          |  |  |        |  |  |        |          |          |        |        |        |          |        |          |           |                     |                               |
|----------------------|------|----------|------|-------|-------|-------|-------|-------|----------|--|--|--------|--|--|--------|----------|----------|--------|--------|--------|----------|--------|----------|-----------|---------------------|-------------------------------|
| Asphalt, 6-inch base | 2489 | 3,255.38 | 1.57 | 1,101 | 340   |       | 1,451 | 1,482 | 1,360.31 |  |  |        |  |  | 351.35 | 15,427   | 1,252.54 |        | 93.05  | 957.47 | 102.28   | 80.00  | 1,028.59 | 6,884.82  | 9,053.16            | Cranford Paving Co.           |
| Asphalt block        | 2477 | 6,683.51 | 1.77 | 1,210 | 30    | 1,240 | 6,620 | 702   | 3,256.59 |  |  | 794.27 |  |  |        | b 12,667 |          |        | 174.78 | 236.98 | 1,320.41 | 380.00 | 169.11   | 13,727.03 | 15,833.53           | Washington Asphalt Paving Co. |
| do                   | 2477 | 1,247.44 | 1.77 | 290   | 160   |       | 348   | 427   | 136.83   |  |  | 446.57 |  |  |        |          |          | 344.22 | 37.16  | 227.38 | 131.78   | 48.00  | 160.38   | 2,562.19  | 3,129.73            | Do.                           |
| do                   | 2477 | 1,797.91 | 1.77 | 60    |       | 60    | 100   | 375   | 651.60   |  |  | 400.34 |  |  |        |          |          |        | 18.84  | 13.19  | 169.26   | 56.00  |          | 3,400.05  | 3,638.50            | Do.                           |
| Granite block        | 2548 | 4,416    | .61  | 496   | 1,880 |       | 2,923 | 243   | 1,099.56 |  |  |        |  |  |        |          |          |        | 380.14 | 768.77 | 252.00   | 148.86 | 4,321.51 | 5,870.78  | Warren F. Brenizer. |                               |

## NORTHEAST.

|               |      |          |      |       |     |       |       |       |          |  |  |          |  |          |        |        |          |          |        |          |        |          |          |           |                               |                     |
|---------------|------|----------|------|-------|-----|-------|-------|-------|----------|--|--|----------|--|----------|--------|--------|----------|----------|--------|----------|--------|----------|----------|-----------|-------------------------------|---------------------|
| Asphalt       | 2489 | 7,079.92 | 1.57 | 1,305 | 620 |       | 2,506 | 3,596 | 222.73   |  |  | 3,517.64 |  |          | 977.48 | 44,173 | 3,362.83 | 9.42     | 154.15 | 2,576.79 | 613.37 | 208.00   | 1,210.45 | 14,978.09 | 19,586.70                     | Cranford Paving Co. |
| Macadam       | 2493 | 7,121.04 | .86  | 2,820 |     |       | 102   |       | 3,250.61 |  |  |          |  | 1,672.46 |        |        |          | 2,904.83 | 118.89 | 1,782.55 | 305.50 | 262.00   | 26.67    | 7,416.29  | 9,793.01                      | Gaskins & Horn.     |
| Asphalt block | 2477 | 4,207.82 | 1.77 | 2,290 | 232 | 2,522 | 1,260 | 750   | 1,895.24 |  |  | 793.17   |  |          |        |        |          |          | 48.72  | 799.08   | 124.00 | 1,106.81 | 8,997.18 | 10,971.77 | Washington Asphalt Paving Co. |                     |
| do            | 2477 | 1,644.15 | 1.77 |       | 620 |       | 114   |       |          |  |  |          |  |          | 76.85  | 3,100  |          |          |        | 62.00    | 32.71  | 56.00    | 536.68   | 3,230.83  | 3,303.60                      | Do.                 |
| Asphalt       | 2489 | 704.50   | 1.57 | 170   | 100 |       | 271   |       |          |  |  |          |  |          |        |        |          |          |        |          |        |          |          | 1,364.17  | 2,445.22                      | Cranford Paving Co. |

## GEORGETOWN.

|                      |      |          |      |       |  |     |       |     |          |       |       |        |  |  |        |        |  |  |       |          |          |        |        |          |          |                           |
|----------------------|------|----------|------|-------|--|-----|-------|-----|----------|-------|-------|--------|--|--|--------|--------|--|--|-------|----------|----------|--------|--------|----------|----------|---------------------------|
| Asphalt, 6-inch base | 2491 | 3,101.98 | 1.57 | 306   |  | 306 | 3,432 | 239 | 1,470.83 | 62.44 | 84.19 | 155.27 |  |  | 479.46 | 20,800 |  |  | 28.79 | 436.15   | 1,391.44 | 144.00 | 815.93 | 5,948.82 | 8,736.34 | Barber Asphalt Paving Co. |
| Macadam              |      | 4,100    |      | 2,200 |  |     |       |     |          |       | 125   | 2,771  |  |  |        |        |  |  | 125   | 1,708.53 |          | 44.50  | 489.53 | 1,906.38 | 4,148.94 | Day labor.                |
| Asphalt, 6-inch base | 2491 | 664.08   | 1.55 | 66    |  | 66  | 778   | 19  | 420.90   |       | 15.71 |        |  |  | 113.78 | 5,000  |  |  | 15.17 | 110.62   | 288.18   | 28.00  | 104.89 | 1,270.92 | 1,802.61 | Barber Asphalt Paving Co. |

a Granite block

b Pressed brick.

TABLE A.—Schedule of street improvements, 1898.

## NORTHWEST.

| Pavement feet. | Contract work.             |                   |                      |                      |                    |                    |               |                 |                          |                  | Material.         |                          |           | Cost of material. | Cost of extra work. | Cost of inspection. | Removing sewer traps, water boxes, trees, lamp-posts, etc. | Amount of contract. | Total cost of streets. | Name of contractor.       |
|----------------|----------------------------|-------------------|----------------------|----------------------|--------------------|--------------------|---------------|-----------------|--------------------------|------------------|-------------------|--------------------------|-----------|-------------------|---------------------|---------------------|------------------------------------------------------------|---------------------|------------------------|---------------------------|
|                | Old cobble, etc., removed. | Old curb removed. | Straight curb reset. | Circular curb reset. | Circular curb set. | Straight curb set. | Brick relaid. | Cobble gutters. | Vitrified block gutters. | Vitrified block. | 8 by 8, straight. | Curb, 6 by 20, straight. | Circular. |                   |                     |                     |                                                            |                     |                        |                           |
|                | Sq. yards.                 | Lin. feet.        | Lin. feet.           | Lin. feet.           | Lin. feet.         | Lin. feet.         | Sq. yards.    | Sq. yards.      | Sq. yards.               | Number.          | Feet.             | Feet.                    | Feet.     |                   |                     |                     |                                                            |                     |                        |                           |
| 50             | 272                        | 1,450             | 34.43                | -----                | 13.87              | 1,437.07           | -----         | -----           | 189.22                   | 8,600            | 1,450.69          | -----                    | 17.16     | \$871.03          | \$83.48             | \$106.00            | \$327.90                                                   | \$5,645.15          | \$7,033.56             | Cranford Paving Co.       |
| 58             | a 2,755                    | 1,828             | -----                | -----                | -----              | 1,762.52           | -----         | -----           | 468.25                   | 20,000           | 1,647.39          | -----                    | 134.12    | 1,260.30          | 1,671.38            | 144.00              | 1,706.47                                                   | 7,473.87            | 12,256.02              | Do.                       |
| 70             | -----                      | 196               | 12.22                | -----                | 10.70              | 308.81             | -----         | -----           | 103.88                   | 4,589            | 316.48            | -----                    | 11.17     | 248.59            | 27.67               | 33.00               | 23.54                                                      | 1,690.26            | 2,023.06               | Do.                       |
| 96.16          | 1,882.94                   | 369               | 27.96                | -----                | 6.29               | 580.46             | -----         | -----           | 158.61                   | 6,942            | 585.45            | -----                    | 8.15      | 421.06            | 56.59               | 63.50               | 77.10                                                      | 3,086.73            | 4,306.58               | Barber Asphalt Paving Co. |
| 84             | 1,911                      | 457               | -----                | -----                | 39.95              | 759.02             | -----         | -----           | 197.67                   | 8,335            | 765.60            | -----                    | 43.95     | 555.85            | 52.34               | 49.00               | 54.33                                                      | 3,654.85            | 4,366.37               | Do.                       |
| 141            | 1,971.44                   | 141               | 440.06               | -----                | 37.85              | 103.97             | -----         | -----           | 150.88                   | 6,800            | 106.30            | -----                    | 42.35     | 212.77            | 165.74              | 60.00               | 103.02                                                     | 3,561.34            | 4,102.87               | Do.                       |
| 127            | 1,227                      | 1,900             | 84.29                | -----                | 72.17              | 1,893.26           | -----         | -----           | 516.25                   | 22,204           | 1,895.02          | -----                    | 72.45     | 1,386.23          | 516.25              | 78.00               | 197.02                                                     | 6,951.02            | 9,128.52               | Cranford Paving Co.       |
| 82.50          | 330                        | 745               | 13.25                | -----                | 46.90              | 772.60             | -----         | -----           | 200.47                   | 8,852            | 766.44            | -----                    | 46.96     | 568.34            | 114.52              | 32.00               | 15.16                                                      | 2,586.95            | 3,316.97               | Do.                       |
| 75.60          | 1,420                      | 786               | 21                   | -----                | 15.58              | 377.06             | -----         | -----           | 102.99                   | 4,900            | 382.21            | -----                    | 17.48     | 289.69            | 148.68              | 48.00               | 46.42                                                      | 2,027.59            | 2,560.38               | Barber Asphalt Paving Co. |
| -----          | -----                      | 46.70             | -----                | 75.45                | -----              | 46.70              | -----         | -----           | 209.81                   | 9,500            | 957.62            | -----                    | 62.11     | 596.30            | 493.65              | 104.00              | 104.08                                                     | 2,802.36            | 4,100.39               | Cranford Paving Co.       |
| -----          | -----                      | -----             | -----                | -----                | -----              | -----              | -----         | -----           | 301.25                   | 12,925           | -----             | -----                    | -----     | 258.50            | 90.85               | 172.00              | 65.22                                                      | 4,267.04            | 4,853.61               | Do.                       |

## SOUTHWEST.

|       |       |       |          |       |       |          |       |       |        |        |          |       |       |        |        |        |        |          |          |                                       |
|-------|-------|-------|----------|-------|-------|----------|-------|-------|--------|--------|----------|-------|-------|--------|--------|--------|--------|----------|----------|---------------------------------------|
| 580   | 360   | 161   | 483.64   | ----- | ----- | 139.49   | ----- | ----- | 149.22 | 6,700  | -----    | ----- | 35.15 | 158.61 | 178.99 | 85.00  | 126.60 | 2,536.56 | 3,086.76 | Barber Asphalt Paving Co.             |
| ----- | 302   | 1,118 | 18.51    | ----- | ----- | 1,114.09 | ----- | ----- | -----  | -----  | 1,064.08 | ----- | 37.47 | 680.42 | 68.23  | 82.00  | 336.50 | 3,261.91 | 4,409.06 | Washington Asphalt Block and Tile Co. |
| ----- | 603   | 300   | 1,041.96 | ----- | ----- | 268.36   | ----- | ----- | 144.45 | 6,107  | -----    | ----- | 23.34 | 138.48 | 83.25  | 116.00 | 766.55 | 3,258.81 | 4,363.09 | Barber Asphalt Paving Co.             |
| ----- | 2,396 | 365   | 959.11   | ----- | ----- | 450.11   | ----- | ----- | 300.76 | 13,127 | -----    | ----- | 66.72 | 309.24 | 705.93 | 158.00 | 598.21 | 4,125.62 | 5,897.00 | Do.                                   |
| ----- | 67    | 20    | 57.37    | ----- | ----- | 1,197.11 | ----- | ----- | -----  | -----  | -----    | ----- | ----- | 700.31 | -----  | 152.00 | 6.00   | 2,476.28 | 3,334.59 | Washington Asphalt Block and Tile Co. |

## SOUTHEAST.

|       |       |       |          |       |       |        |       |       |        |          |          |        |        |        |          |        |          |           |           |                                       |
|-------|-------|-------|----------|-------|-------|--------|-------|-------|--------|----------|----------|--------|--------|--------|----------|--------|----------|-----------|-----------|---------------------------------------|
| 240   | 1,451 | 1,482 | 1,360.31 | ----- | ----- | 794.27 | ----- | ----- | 351.35 | 15,427   | 1,252.54 | -----  | 93.05  | 957.47 | 102.28   | 80.00  | 1,028.59 | 6,884.82  | 9,053.16  | Cranford Paving Co.                   |
| 60    | 6,620 | 702   | 3,256.59 | ----- | ----- | 446.57 | ----- | ----- | -----  | b 12,667 | -----    | -----  | 174.78 | 236.98 | 1,320.41 | 380.00 | 169.11   | 13,727.03 | 15,833.53 | Washington Asphalt Block and Tile Co. |
| ----- | 348   | 427   | 136.83   | ----- | ----- | 400.34 | ----- | ----- | -----  | -----    | -----    | 344.22 | 37.16  | 227.38 | 131.73   | 48.00  | 160.38   | 2,562.19  | 3,120.73  | Do.                                   |
| ----- | 100   | 375   | 651.60   | ----- | ----- | -----  | ----- | ----- | -----  | -----    | -----    | -----  | 18.84  | 13.19  | 169.26   | 56.00  | -----    | 3,400.05  | 3,638.50  | Do.                                   |
| ----- | 2,923 | 243   | 1,099.56 | ----- | ----- | -----  | ----- | ----- | -----  | -----    | -----    | -----  | -----  | 380.14 | 768.77   | 252.00 | 148.86   | 4,321.51  | 5,870.78  | Warren F. Brenizer.                   |

## NORTHEAST.

|       |       |       |          |       |       |          |       |          |        |        |          |          |        |          |        |        |          |           |           |                                       |
|-------|-------|-------|----------|-------|-------|----------|-------|----------|--------|--------|----------|----------|--------|----------|--------|--------|----------|-----------|-----------|---------------------------------------|
| 522   | 2,506 | 3,506 | 222.73   | ----- | ----- | 3,517.64 | ----- | -----    | 977.48 | 44,173 | 3,362.83 | 9.42     | 154.15 | 2,576.79 | 613.37 | 208.00 | 1,210.45 | 14,978.09 | 19,586.70 | Cranford Paving Co.                   |
| 620   | 102   | ----- | 3,250.61 | ----- | ----- | -----    | ----- | 1,672.46 | -----  | -----  | -----    | 2,904.83 | 118.89 | 1,782.55 | 305.50 | 262.00 | 26.67    | 7,416.29  | 9,793.01  | Gaskins & Horn.                       |
| ----- | 1,260 | 750   | 1,885.24 | ----- | ----- | 793.17   | ----- | -----    | -----  | -----  | -----    | -----    | 48.72  | 34.10    | 709.68 | 124.00 | 1,106.81 | 8,997.18  | 10,971.77 | Washington Asphalt Block and Tile Co. |
| ----- | 114   | ----- | -----    | ----- | ----- | -----    | ----- | -----    | 76.85  | 3,100  | -----    | -----    | -----  | -----    | 12.77  | 60.00  | -----    | 3,230.83  | 3,303.60  | Do.                                   |
| ----- | 271   | ----- | -----    | ----- | ----- | -----    | ----- | -----    | -----  | -----  | -----    | -----    | -----  | 62.00    | 32.71  | 56.00  | 536.68   | 1,364.17  | 2,445.22  | Cranford Paving Co.                   |

## GEORGETOWN.

|       |       |       |          |       |       |        |       |       |        |        |       |       |          |          |        |        |          |          |                           |
|-------|-------|-------|----------|-------|-------|--------|-------|-------|--------|--------|-------|-------|----------|----------|--------|--------|----------|----------|---------------------------|
| 306   | 3,432 | 239   | 1,470.83 | 62.44 | 84.19 | 155.27 | ----- | ----- | 479.46 | 20,800 | ----- | 28.79 | 436.15   | 1,391.44 | 144.00 | 815.93 | 5,948.82 | 8,736.34 | Barber Asphalt Paving Co. |
| 66    | 778   | 19    | 420.90   | ----- | 125   | 2,771  | ----- | 94.70 | 113.78 | 5,000  | ----- | 15.17 | 1,708.53 | 288.18   | 44.50  | 489.53 | 1,906.38 | 4,148.94 | Barber Asphalt Paving Co. |
| ----- | ----- | ----- | -----    | ----- | 15.71 | -----  | ----- | ----- | -----  | -----  | ----- | ----- | 110.62   | -----    | 28.00  | 104.89 | 1,270.92 | 1,802.61 | -----                     |

a Granite block

b Pressed brick.

TABLE B.—Suburban streets.

| Street.                                   | From—                   | To—                             | Kind of pavement.           | Number of contract. | Contract work.     |                   |                       |                        |                         |                        |                   |                 |                 |                    |                    |                   |                 |            | Vitrified brick gutters. | Vitrified block. |
|-------------------------------------------|-------------------------|---------------------------------|-----------------------------|---------------------|--------------------|-------------------|-----------------------|------------------------|-------------------------|------------------------|-------------------|-----------------|-----------------|--------------------|--------------------|-------------------|-----------------|------------|--------------------------|------------------|
|                                           |                         |                                 |                             |                     | Square yards.      | Price per yard.   | Ordinary grading.     | Macadam grading.       | Hauled over 2,500 feet. | Old cobble removed.    | Old curb removed. | Straight reset. | Circular reset. | Circular curb set. | Straight curb set. | Cobble gutters.   |                 |            |                          |                  |
| Princeton NW.....                         | Thirteenth.....         | Fourteenth.....                 | Asphalt block.....          | 2477                | 2,333.26           | \$1.77            | <i>Cu. yds.</i> 34.10 | <i>Cu. yds.</i> 250.00 | <i>Cu. yds.</i>         | <i>Sq. yds.</i> 462.00 | <i>Lin. ft.</i>   | <i>Lin. ft.</i> | <i>Lin. ft.</i> | <i>Lin. ft.</i>    | <i>Lin. ft.</i>    | <i>Sq. yds.</i>   | <i>Sq. yds.</i> | <i>No.</i> |                          |                  |
| Spruce and Bohrer.....                    | Florida avenue.....     | Larch.....                      | Asphalt on 6-inch base..... | 2491                | 1,878.52           | 1.56 <sup>a</sup> | 509.20                | 300.00                 | 50.00                   | 410.00                 | 31.00             | 8.85            | 4.70            | 41.88              | 442.86             |                   | 440.28          |            |                          |                  |
| Massachusetts avenue extended.....        | Twenty-second.....      | Sheridan circle.....            | do.....                     | 2489                | 2,347.88           | 1.57              | 250.00                | 430.00                 | 250.00                  | 420.00                 |                   | 825.66          |                 |                    |                    |                   | 224.20          | 9.66       |                          |                  |
| Connecticut avenue and Columbia road..... | Florida avenue.....     | Eighteenth street extended..... | do.....                     | 2524                | 203.97             |                   | 12.00                 | 28.00                  |                         |                        |                   |                 |                 |                    |                    |                   | 16.18           | 70         |                          |                  |
|                                           |                         |                                 |                             | 2413                | 9,369.73           | 1.70              | 2,843.19              | 844.27                 | 1,021.00                | 1,457.00               | 4,037.00          | 445.54          | 136.86          | 306.75             | 4,961.50           |                   | 1,421.58        | 65.80      |                          |                  |
| Thirteenth, Roanoke, Irving, etc.....     | Seventh.....            | Thirteenth.....                 | Gravel.....                 |                     | 10,252.13          | .16               |                       |                        |                         |                        |                   |                 |                 |                    |                    |                   |                 |            |                          |                  |
| Sherman avenue.....                       | Grant.....              | Whitney avenue.....             | Macadam.....                | 2492                | 2,559.22           | .68               | 9,602.32              |                        | 4,665.00                |                        |                   |                 |                 |                    |                    | 5,264.46          |                 |            |                          |                  |
| Baltimore and Twentieth.....              |                         |                                 | Gravel road.....            | 2502                | 11,318.41          | .13               | 8,865.00              |                        | 1,320.00                |                        |                   |                 |                 |                    |                    |                   |                 |            |                          |                  |
| Baltimore.....                            |                         |                                 | Grading.....                | 2528                | <i>a</i> 7,013.00  |                   |                       |                        |                         |                        |                   |                 |                 |                    |                    |                   |                 |            |                          |                  |
| Emporia.....                              | Columbia road.....      | Twentieth.....                  | Asphalt on 6-inch base..... | 2546                | 1,793.52           | 1.78              | 334.00                |                        |                         |                        |                   |                 |                 | 81.81              | 1,365.51           |                   | 281.52          | 11.90      |                          |                  |
| Joliet.....                               | Twelfth.....            | Brentwood road.....             | Grade and gravel.....       |                     | 5,489.72           | .22               | 5,180.00              |                        | 1,664.48                |                        |                   |                 |                 |                    |                    | 1,664.48          |                 |            |                          |                  |
| Twelfth extended.....                     | Connecticut avenue..... | Zoological Park.....            | Grading <i>b</i> .....      |                     |                    |                   |                       |                        |                         |                        |                   |                 |                 |                    |                    |                   |                 |            |                          |                  |
|                                           | Florida avenue.....     | Mount Olivet road.....          | Macadam.....                | 2493                | 7,627.23           | .91               | 7,772.06              | 583.00                 |                         | 1,173.64               |                   |                 |                 |                    |                    | <i>c</i> 2,926.72 |                 |            |                          |                  |
| Roanoke.....                              | Thirteenth.....         | Fourteenth.....                 | Asphalt block.....          | 2477                | 2,115.01           | 1.77              | 502.19                |                        |                         | 562.00                 | 8.76              | 1,259.78        |                 | 18.85              | 9.08               |                   |                 |            |                          |                  |
| Kenesaw avenue and Park road.....         | Eighteenth.....         | Klingbe road.....               | Grading.....                | 2525                | <i>a</i> 58,573.72 | .14 <sup>a</sup>  |                       |                        |                         |                        |                   |                 |                 |                    |                    |                   |                 |            |                          |                  |

199A—To face p. 8—2

<sup>a</sup> Cubic yards.<sup>b</sup> Condemnation and expenses, \$3,869.03.



TABLE B.—Suburban streets.

| Contract work. |                 |                   |                  |                         |                     |                   |                      |                      |                    |                    |                 |                          | Material.        |                  |                   |                 | Cost of material. | Cost of extra work. | Cost of inspection and salaries. | Removing sewer traps, water boxes, trees, lamp-posts, etc. | Amount of contract. | Total cost of street. | Name of contractor.                      |                                         |  |  |
|----------------|-----------------|-------------------|------------------|-------------------------|---------------------|-------------------|----------------------|----------------------|--------------------|--------------------|-----------------|--------------------------|------------------|------------------|-------------------|-----------------|-------------------|---------------------|----------------------------------|------------------------------------------------------------|---------------------|-----------------------|------------------------------------------|-----------------------------------------|--|--|
| Square yards.  | Price per yard. | Ordinary grading. | Macadam grading. | Hauled over 2,500 feet. | Old cobble removed. | Old curb removed. | Straight curb reset. | Circular curb reset. | Circular curb set. | Straight curb set. | Cobble gutters. | Vitrified brick gutters. | Vitrified block. | Curb.            |                   |                 |                   |                     |                                  |                                                            |                     |                       |                                          |                                         |  |  |
|                |                 |                   |                  |                         |                     |                   |                      |                      |                    |                    |                 |                          |                  | 8 by 8 straight. | 6 by 20 straight. | Circular.       |                   |                     |                                  |                                                            |                     |                       |                                          |                                         |  |  |
|                |                 | <i>Cu. yds.</i>   | <i>Cu. yds.</i>  | <i>Cu. yds.</i>         | <i>Sq. yds.</i>     | <i>Lin. ft.</i>   | <i>Lin. ft.</i>      | <i>Lin. ft.</i>      | <i>Lin. ft.</i>    | <i>Lin. ft.</i>    | <i>Sq. yds.</i> | <i>Sq. yds.</i>          | <i>No.</i>       | <i>Lin. ft.</i>  | <i>Lin. ft.</i>   | <i>Lin. ft.</i> |                   |                     |                                  |                                                            |                     |                       |                                          |                                         |  |  |
| 2,333.26       | \$1.77          | 34.10             | 250.00           |                         | 462.00              |                   |                      |                      |                    |                    |                 |                          |                  |                  |                   |                 |                   |                     | \$14.65                          | \$186.50                                                   | \$16.00             | { \$50.00             | \$4,589.40                               | { M. F. Talty, grading.                 |  |  |
| 1,878.52       | 1.56            | 509.20            | 300.00           | 50.00                   | 410.00              | 31.00             | 8.85                 | 4.70                 | 41.88              | 442.86             |                 | 440.28                   |                  |                  |                   |                 |                   | \$1,670.96          | 177.41                           | 516.00                                                     | 65.25               | 4,322.25              | 4,589.40                                 | { Washington Asphalt Block and Tile Co. |  |  |
| 2,347.88       | 1.57            | 250.00            | 430.00           | 250.00                  | 420.00              |                   | 825.66               |                      |                    |                    |                 | 224.20                   | 9,660            |                  |                   |                 |                   | 237.62              |                                  | 291.12                                                     |                     | 3,973.79              | 6,403.41                                 | { Barber Asphalt Paving Co.             |  |  |
| 203.97         |                 | 12.00             | 28.00            |                         |                     |                   |                      |                      |                    |                    |                 | 16.18                    | 700              |                  |                   |                 |                   | 14.00               | 6.21                             |                                                            |                     | 4,465.59              | 4,994.33                                 | { Cranford Paving Co.                   |  |  |
| 9,369.73       | 1.70            | 2,843.19          | 844.27           | 1,021.00                | 1,457.00            | 4,037.00          | 445.54               | 136.86               | 306.75             | 4,961.50           |                 | 1,421.58                 | 65,800           | 4,783.85         |                   | 265.63          | 3,742.40          | 886.84              | 1,505.55                         | 1,480.40                                                   | 21,718.68           | 29,741.68             | { Do.                                    |                                         |  |  |
| 10,252.13      | .16             |                   |                  |                         |                     |                   |                      |                      |                    |                    | 5,264.46        |                          |                  |                  |                   |                 |                   |                     | 218.46                           | 543.75                                                     | 345.17              | 6,891.86              | 7,999.24                                 | { M. F. Talty.                          |  |  |
| 2,559.22       | .68             | 9,602.32          |                  | 4,665.00                |                     |                   |                      |                      |                    |                    |                 |                          |                  |                  |                   |                 | 64.28             | 665.82              | 3,882.60                         | 256.97                                                     | 5,130.33            | 10,000.00             | { Lyons Bros. and day labor.             |                                         |  |  |
| 11,318.41      | .13             | 8,865.00          |                  | 1,320.00                |                     |                   |                      |                      |                    |                    | 3,484.97        |                          |                  |                  |                   |                 |                   |                     |                                  | 79.50                                                      |                     | 1,244.81              | 1,324.31                                 | { James Frawley.                        |  |  |
| a 7,013.00     |                 |                   |                  |                         |                     |                   |                      |                      |                    |                    |                 |                          |                  |                  |                   |                 | 933.39            | 21.76               | 86.00                            |                                                            | 4,369.26            | 5,410.41              | { Barber Asphalt Paving Co.              |                                         |  |  |
| 1,793.52       | 1.78            | 334.00            |                  |                         |                     |                   |                      |                      | 81.81              | 1,365.51           |                 | 281.52                   | 11,960           | 1,362.51         |                   | 81.00           | 62.50             | 516.02              | 663.12                           |                                                            | 2,750.45            | 3,998.09              | { Charles Eslin.                         |                                         |  |  |
| 5,489.72       | .22             | 5,180.00          |                  | 1,664.48                |                     |                   |                      |                      |                    |                    | 1,664.48        |                          |                  |                  |                   |                 | 156.25            |                     | 139.13                           |                                                            | 835.47              | 4,999.88              | { Day labor.                             |                                         |  |  |
| 7,627.23       | .91             | 7,772.06          | 583.00           |                         | 1,173.64            |                   |                      |                      |                    |                    | c2,926.72       |                          |                  |                  |                   |                 | 17.28             | 151.21              | 876.00                           | 461.49                                                     | 9,311.39            | 10,817.37             | { Repayments, \$845.87; balance, \$28.50 |                                         |  |  |
|                |                 |                   |                  |                         |                     |                   |                      |                      |                    |                    |                 |                          |                  |                  |                   |                 |                   |                     |                                  |                                                            |                     |                       |                                          | { Gaskins & Horn.                       |  |  |
| 2,115.01       | 1.77            | 502.19            |                  |                         | 562.00              | 8.76              | 1,259.78             |                      | 18.85              | 9.08               |                 |                          |                  |                  |                   | 18.84           | 13.19             | 14.84               | 186.50                           | 8.88                                                       | { 50.00             | 4,417.08              | { M. F. Talty.                           |                                         |  |  |
| a 58,573.72    | .14             |                   |                  |                         |                     |                   |                      |                      |                    |                    |                 |                          |                  |                  |                   |                 | 203.94            |                     | 495.50                           | 587.72                                                     | 4,143.67            | 10,000.00             | { Washington Asphalt Block and Tile Co.  |                                         |  |  |
|                |                 |                   |                  |                         |                     |                   |                      |                      |                    |                    |                 |                          |                  |                  |                   |                 |                   |                     |                                  |                                                            | 8,712.84            |                       |                                          | { George B. Mullin.                     |  |  |

b Condemnation and expenses, \$3,869.03.

c And 36 feet 24-inch sewer pipe.



TABLE C.—Repairs to concrete pavements, year ending June 30, 1898.

| Street.                             | From—                               | To—                    | Year laid. | Square yards. | Contract work. | Extra work. | Total cost.  | Original pavement. | Remarks.                      |
|-------------------------------------|-------------------------------------|------------------------|------------|---------------|----------------|-------------|--------------|--------------------|-------------------------------|
| Eleventh NW.....                    | H.....                              | I.....                 | 1875       | 129, 714      | \$2, 267. 08   | .....       | \$2, 267. 08 | Concrete.....      | Resurface.                    |
| New York avenue NW..                | Tenth.....                          | Eleventh.....          | 1872       | a 30, 100     | 16, 046. 19    | \$433. 69   | 6, 479. 88   | .....do.....       | 301 yards new pavement.       |
| Eighteenth NW.....                  | P.....                              | Q.....                 | 1887       | b 272, 035    | 4, 286. 06     | 313. 69     | 4, 599. 75   | .....do.....       | New pavement.                 |
| Seventeenth NW.....                 | New York avenue.....                | .....                  | 1872       | 177, 141      | 5, 892. 97     | 328. 87     | 6, 221. 84   | .....do.....       | New pavement on 6-inch base.  |
| G SW.....                           | Four-and-a-half.....                | Third.....             | 1888       | 209, 982      | 5, 109. 43     | 435. 82     | 5, 545. 25   | .....do.....       | New pavement.                 |
| Pennsylvania avenue NW, north side. | Eighteenth.....                     | Twenty-first.....      | 1875       | 573, 697      | 13, 422. 35    | 828. 94     | 16, 251. 29  | .....do.....       | Do.                           |
| F NW.....                           | Seventh.....                        | Fourteenth, south side | 1877       | .....         | 849. 03        | 143. 36     | 992. 39      | .....do.....       | .....                         |
| F NW.....                           | Eleventh.....                       | Twelfth.....           | 1877       | 271, 270      | 4, 994. 38     | 300. 48     | 5, 294. 86   | .....do.....       | Resurface.                    |
| K NW.....                           | Ninth.....                          | Tenth.....             | 1875       | 215, 355      | 3, 913. 77     | 406. 28     | 4, 328. 19   | .....do.....       | Do.                           |
| Seventeenth NW.....                 | P.....                              | Q.....                 | 1887       | b 13, 500     | 2, 913. 49     | 305. 59     | 3, 219. 08   | .....do.....       | New pavement and resurfacing. |
| Four-and-a-half NW.....             | Pennsylvania avenue.....            | Missouri avenue.....   | 1886       | a 90, 158     | 6, 882. 54     | 834. 30     | 7, 716. 84   | .....do.....       | Resurface.                    |
| N NW.....                           | Seventeenth.....                    | Eighteenth.....        | 1873       | 320, 874      | 6, 297. 62     | 7. 00       | 6, 304. 62   | Granite block..... | New pavement.                 |
| B SE.....                           | Intersection New Jersey avenue..... | New Jersey avenue..... | 1879       | 12, 728       | 297. 62        | 341. 31     | 492. 49      | Asphalt.....       | Reframed block gutters.       |
| Twelfth NW.....                     | N.....                              | O.....                 | 1881       | 24, 009       | 61. 18         | 55. 67      | 1, 070. 85   | .....do.....       | Resurface.                    |
| Eighth SE.....                      | Intersection M.....                 | .....                  | 1883       | 48, 007       | 1, 015. 18     | 305. 21     | 6, 903. 79   | .....do.....       | Do.                           |
| Second SE.....                      | East Capitol.....                   | B.....                 | 1881       | 320, 533      | 6, 603. 58     | .....       | .....        | .....do.....       | .....                         |
| Tenth NW.....                       | D.....                              | F d.....               | 1885       | 85, 556       | 1, 300. 45     | .....       | 1, 300. 45   | .....do.....       | Roadway widened.              |
|                                     |                                     |                        |            |               |                |             |              | 73, 526. 21        |                               |
|                                     |                                     |                        |            |               |                |             |              | 3, 993. 02         |                               |
|                                     |                                     |                        |            |               |                |             |              | 59, 940. 34        |                               |
|                                     |                                     |                        |            |               |                |             |              | 8, 067. 21         |                               |
|                                     |                                     |                        |            |               |                |             |              | 763. 50            |                               |
|                                     |                                     |                        |            |               |                |             |              | 3, 700. 04         |                               |
| Total.....                          |                                     |                        |            |               |                |             |              | 149, 999. 32       |                               |

a D to E in 1885; E to F in 1879.

c Repairing sidewalks in connection with roadway repairs.

a New. b Resurface.

Building catch basins, removing trees, lamp posts, relaying sidewalks, etc.

Minor repairs

Salaries

Inspection

Material.

TABLE D.—Statement of character and area of street pavements, July 1, 1898.

[Square yards.]

| Locality.  | Asphalt.  | Coal tar and concrete. | Granite. | Cobble. | Macadam. | Asphalt block. | Vitrified brick. | Gravel and unimproved. | Total.    | Percentage of unimproved area. |
|------------|-----------|------------------------|----------|---------|----------|----------------|------------------|------------------------|-----------|--------------------------------|
| Northwest. | 1,514,791 | 291,754                | 176,684  | 130,119 | 58,007   | 27,280         | 6,885            | 187,970                | 2,393,490 | 7.853                          |
| Southwest. | 133,511   | 5,110                  | 234,904  | 77,342  | 33,713   | 30,504         | .....            | 177,578                | 690,454   | 25.719                         |
| Southeast. | 131,925   | 3,154                  | 55,054   | 37,926  | 104,673  | 132,570        | .....            | 491,977                | 955,071   | 51.512                         |
| Northeast. | 189,703   | 8,384                  | 19,111   | 1,738   | 62,828   | 136,688        | .....            | 521,680                | 940,132   | 55.49                          |
| Georgetown | 106,226   | 26,437                 | 60,363   | 29,648  | 14,837   | 8,849          | .....            | 47,423                 | 288,783   | 16.421                         |
| Suburban.  | 197,648   | .....                  | 26,281   | .....   | 491,574  | 7,081          | .....            | .....                  | 377,584   | .....                          |
| Total.     | 2,273,804 | 334,839                | 572,397  | 276,773 | 765,632  | 337,972        | 6,885            | 1,426,628              | 5,645,514 | .....                          |

TABLE E.—Statement showing mileage of street pavements, July 1, 1898.

| Locality.  | Asphalt.     |        | Coal tar and concrete. |        | Granite.     |        | Macadam.     |        | Asphalt block. |        |
|------------|--------------|--------|------------------------|--------|--------------|--------|--------------|--------|----------------|--------|
|            | Linear feet. | Miles. | Linear feet.           | Miles. | Linear feet. | Miles. | Linear feet. | Miles. | Linear feet.   | Miles. |
| Northwest. | 325,009      | 61.55  | 70,552                 | 13.36  | 45,097       | 8.54   | 11,418       | 2.16   | 8,415          | 1.60   |
| Southwest. | 34,358       | 6.50   | 1,320                  | .25    | 56,086       | 10.61  | 7,620        | 1.44   | 8,187          | 1.55   |
| Southeast. | 35,770       | 6.78   | 870                    | .16    | 14,780       | 2.80   | 27,755       | 5.26   | 31,638         | 6      |
| Northeast. | 50,784       | 9.62   | 2,090                  | .40    | 4,700        | .89    | 14,264       | 2.70   | 27,093         | 5.12   |
| Georgetown | 29,830       | 5.65   | 7,410                  | 1.40   | 17,271       | 3.26   | 4,200        | .80    | 1,500          | .28    |
| Suburban.  | 53,036       | 10.04  | .....                  | .....  | 7,450        | 1.41   | 117,726      | 22.30  | 2,030          | .38    |
| Total.     | 528,787      | 100.14 | 82,242                 | 15.57  | 145,384      | 27.51  | 182,983      | 34.66  | 78,863         | 14.93  |

| Locality.  | Vitrified brick. |        | Cobble.      |        | Unimproved.  |        | Total.       |        |
|------------|------------------|--------|--------------|--------|--------------|--------|--------------|--------|
|            | Linear feet.     | Miles. | Linear feet. | Miles. | Linear feet. | Miles. | Linear feet. | Miles. |
| Northwest. | 1,070            | 0.20   | 24,297       | 4.61   | 55,594       | 10.50  | 541,452      | 102.52 |
| Southwest. | .....            | .....  | 16,953       | 3.22   | 49,750       | 9.42   | 174,274      | 32.99  |
| Southeast. | .....            | .....  | 12,259       | 2.32   | 123,050      | 23.31  | 246,122      | 46.63  |
| Northeast. | .....            | .....  | 750          | .14    | 137,143      | 26     | 236,824      | 44.87  |
| Georgetown | .....            | .....  | 10,640       | 2      | 13,845       | 2.62   | 84,696       | 16.01  |
| Suburban.  | .....            | .....  | .....        | .....  | .....        | .....  | 103,742      | 19.63  |
| Total.     | 1,070            | .20    | 64,899       | 12.29  | 379,382      | 71.85  | 1,387,110    | 262.65 |

TABLE F.—Work done at cost of railroad companies, 1898.

| Company.         | Street.                                                                                                   | From—        | To—         | Cost.   |
|------------------|-----------------------------------------------------------------------------------------------------------|--------------|-------------|---------|
| Capital Traction | M NW                                                                                                      | Twenty-sixth | Rock Creek  | \$77.07 |
|                  | Pennsylvania avenue.                                                                                      | Fourteenth   | Seventeenth | 120.07  |
|                  | Columbia road and Eighteenth.                                                                             | .....        | .....       | 280.18  |
|                  | Pennsylvania avenue SE., intersection of Fifth.                                                           | .....        | .....       | 5.43    |
|                  | Pennsylvania avenue NW.                                                                                   | Seventeenth  | Eighteenth  | 55.80   |
|                  | Fourteenth, corner Park.                                                                                  | .....        | .....       | 4.13    |
|                  | Fifteenth and New York avenue, Fifteenth and Pennsylvania avenue, and Fourteenth and Pennsylvania avenue. | .....        | .....       | 13.92   |
|                  | New Jersey avenue, intersection of C. Second and Pennsylvania avenue SE.                                  | .....        | .....       | 3.70    |
|                  |                                                                                                           |              |             | 23.31   |

TABLE F.—Work done at cost of railroad companies, 1898—Continued.

| Company.                          | Street.                                              | From—                 | To—                   | Cost.       |
|-----------------------------------|------------------------------------------------------|-----------------------|-----------------------|-------------|
| Capital Traction.....             | M N W .....                                          | Twenty-sixth.....     | Rock Creek.....       | \$77. 07    |
|                                   | Repair of spike holes<br>of temporary track.         |                       |                       | 206. 76     |
|                                   | Eighth SE., intersec-<br>tion of M.                  |                       |                       | 58. 60      |
|                                   | B SE .....                                           | New Jersey avenue...  | Capitol grounds ..... | 72. 55      |
|                                   | Second SE., intersec-<br>tion B.                     |                       |                       | 48. 97      |
|                                   | M .....                                              | Thirty-first .....    | Thirty-second .....   | 177. 55     |
|                                   | M .....                                              | Thirty-second .....   | Thirty-third .....    | 785. 06     |
|                                   | Pennsylvania avenue.                                 | Fifteenth .....       | Eighteenth .....      | 7. 41       |
|                                   | U .....                                              | Seventh .....         | Ninth .....           | 22. 11      |
|                                   | M .....                                              | Rock Creek .....      | Thirty-first .....    | 14. 09      |
|                                   |                                                      |                       |                       | 1, 976. 71  |
|                                   |                                                      |                       |                       | 2. 15       |
|                                   | Ninth, intersection<br>Pennsylvania ave-<br>nue.     |                       |                       |             |
|                                   | F .....                                              | Twelfth .....         | Thirteenth .....      | . 49        |
| Metropolitan .....                | Fourteenth .....                                     | F .....               | New York avenue ..    | 15. 43      |
|                                   | Thirty-six, intersec-<br>tion of Prospect.           |                       |                       | 1. 27       |
|                                   | North side Lincoln<br>park.                          |                       |                       | 2. 45       |
|                                   | F .....                                              | South side Twelfth .. | Thirteenth .....      | . 35        |
|                                   | Florida avenue .....                                 | Eighteenth .....      | Connecticut avenue.   | 12. 09      |
|                                   | Ninth, intersection of<br>U.                         |                       |                       | 7. 07       |
|                                   | Connecticut avenue...                                | Dupont Circle .....   | Q .....               | 1. 24       |
|                                   | Ninth at Florida ave-<br>nue.                        |                       |                       | 27. 13      |
|                                   | Tenth at East Capitol.                               |                       |                       | 15. 81      |
|                                   | F .....                                              | North side Seventh... | Tenth .....           | 3. 88       |
|                                   | F .....                                              | South side Seventh .. | Fourteenth .....      | 1, 168. 55  |
|                                   | Second, intersection<br>East Capitol.                |                       |                       | 38. 14      |
|                                   | Columbia road and<br>Connecticut avenue.             | Florida avenue .....  | Eighteenth .....      | 2, 532. 46  |
|                                   | New Jersey avenue,<br>intersection D.                |                       |                       | 5. 43       |
|                                   | Thirteenth and F in-<br>tersection.                  |                       |                       | 2. 40       |
|                                   | Connecticut avenue,<br>Dupont Circle and<br>M.       |                       |                       | . 49        |
|                                   | Thirty-fifth .....                                   | N .....               | O .....               | 4. 13       |
|                                   | Dumbarton .....                                      | Twenty-eighth .....   | Thirty-second .....   | 5. 43       |
|                                   | Connecticut avenue,<br>intersection K.               |                       |                       | 2. 47       |
|                                   | Ninth .....                                          | F .....               | G .....               | 165. 68     |
|                                   | Fourteenth, intersec-<br>tion New York ave-<br>nue.  |                       |                       | 5. 43       |
|                                   |                                                      |                       |                       | 4, 019. 97  |
| Columbia .....                    | New York avenue....                                  | Tenth .....           | Eleventh .....        | 295. 68     |
|                                   | Do .....                                             | Fourteenth .....      | Fifteenth .....       | 1. 24       |
|                                   | Massachusetts avenue                                 | Fourth .....          | Sixth .....           | 25. 50      |
|                                   | New York avenue, in-<br>tersection of Elev-<br>enth. |                       |                       | 3. 21       |
|                                   | New York avenue, in-<br>tersection of Tenth.         |                       |                       | 4. 45       |
|                                   | New York avenue, in-<br>tersection of Twelfth        |                       |                       | 3. 46       |
| Belt Line .....                   | H NE .....                                           | First .....           | Fifteenth .....       | 62. 49      |
|                                   | F NW., intersection<br>of Eleventh.                  |                       |                       | 48. 11      |
|                                   | New York avenue, in-<br>tersection of Elev-<br>enth. |                       |                       | 94. 28      |
|                                   | Thirty-second, inter-<br>section of M.               |                       |                       | 41. 74      |
| Georgetown and Ten-<br>nallytown. | Fourth, SE .....                                     | E .....               | G .....               | 2, 893. 00  |
| Anacostia and Poto-<br>mac River. | North Capitol .....                                  | O .....               | Q .....               | 4, 218. 70  |
| Maryland and Wash-<br>ington.     |                                                      |                       |                       | 7, 691. 86  |
| Total .....                       |                                                      |                       |                       | 13, 688. 54 |

TABLE G.—*Street railways in the District of Columbia July 1, 1898.*

| Name of company.                          | Motive power.                      | Mileage operated.        |               |                                  |               |
|-------------------------------------------|------------------------------------|--------------------------|---------------|----------------------------------|---------------|
|                                           |                                    | Tracks owned by company. |               | Tracks owned by other companies. |               |
|                                           |                                    | Double.                  | Single.       | Double.                          | Single.       |
|                                           |                                    | <i>Miles.</i>            | <i>Miles.</i> | <i>Miles.</i>                    | <i>Miles.</i> |
| Capital Traction .....                    | Underground and overhead electric. | 16.33                    | .....         | .....                            | .....         |
| Metropolitan .....                        | Underground electric.....          | 10.21                    | 3.70          | .....                            | .....         |
| Columbia.....                             | Cable .....                        | 2.86                     | .....         | .....                            | .....         |
| Eckington and Soldiers' Home.             | Overhead electric and horse.       | 7.13                     | 1.57          | .89                              | .23           |
| Belt Line.....                            | Horse .....                        | 5.96                     | 1.22          | .28                              | .....         |
| Brightwood .....                          | Overhead electric.....             | 4.60                     | 1.90          | .....                            | .....         |
| Georgetown and Tennallytown               | do .....                           | 4.30                     | .....         | .....                            | .....         |
| Anacostia and Potomac River.              | Horse .....                        | 5.42                     | .23           | 1.27                             | .....         |
| Washington and Great Falls..              | Overhead electric.....             | 3.70                     | .....         | .....                            | .....         |
| Washington, Alexandria, and Mount Vernon. | Underground electric.....          | a .90                    | .33           | .....                            | .....         |
| Maryland and Washington....               | Overhead electric .....            | 2.28                     | .....         | .....                            | .....         |
| Capital.....                              | Underground and overhead electric. | .....                    | 1.32          | b 1.22                           | .20           |
| Baltimore and Washington Transit.         | Overhead electric.....             | .....                    | .43           | .....                            | .....         |
| Washington and Glen Echo...               | do .....                           | .10                      | .....         | .....                            | .....         |
| Total.....                                | .....                              | 63.73                    | 10.70         | 3.66                             | .43           |

a New electric construction of Belt Line tracks on Fourteenth street.

b Capital Railway adapted Anacostia tracks to electric system.

TABLE H.—Statement of character and extent of street pavements July 1, 1898.  
NORTHWEST.

| Locality.                                                                | Carriageway. |              |          |                         |          |                       |          |                |                         |                  | Resurfaced; originally paved with— |
|--------------------------------------------------------------------------|--------------|--------------|----------|-------------------------|----------|-----------------------|----------|----------------|-------------------------|------------------|------------------------------------|
|                                                                          | Length.      | Width.       | Asphalt. | Coal tar and con-crete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unim-proved. | Year paved.      |                                    |
|                                                                          | Feet.        | Feet.        | Sq. yds. | Sq. yds.                | Sq. yds. | Sq. yds.              | Sq. yds. | Sq. yds.       | Sq. yds.                |                  |                                    |
| North Capital street, from B (west side) to C.....                       | 490          | 50           | 1,395    |                         |          |                       |          |                |                         |                  | 1883                               |
| North Capitol street, from C (west side) to D.....                       | 400          | 50           |          |                         |          |                       |          |                | 1,050                   |                  |                                    |
| North Capitol street, from D (west side) to E.....                       | 400          | 50           |          |                         | 1,198    |                       |          |                |                         |                  | 1893                               |
| North Capitol street, from E (west side) to Massachu-setts avenue.       | 540          | 50           |          | 1,928                   |          |                       |          |                |                         |                  | 1889                               |
| North Capitol street, from Massachusetts avenue (west side) to I street. | 1,390        | 50           | 3,728    |                         |          |                       |          |                |                         |                  | 1887                               |
| North Capitol street, from I (west side) to K.....                       | 440          | 50           | 1,443    |                         |          |                       |          |                |                         |                  | 1889                               |
| North Capitol street, from K (west side) to M.....                       | 1,130        | 50           | 3,103    |                         |          |                       |          |                |                         |                  | 1892                               |
| North Capitol street, from M (west side) to New York avenue.             | 500          | 50           | 1,103    |                         |          |                       |          |                |                         |                  | 1893                               |
| North Capitol street, from New York avenue (west side) to O street.      | 445          | 50           | 852      |                         |          |                       |          |                |                         |                  | 1893                               |
| North Capitol street, from O to Florida avenue.....                      | 720          | 50           | 548      |                         |          |                       |          | 685            |                         |                  | 1898                               |
| Arthur street, between New Jersey avenue and First, B and C streets.     | 470          | 25           |          |                         |          |                       |          | 1,366          |                         |                  | 1886                               |
| First street, from center of Botanical Garden to Penn-sylvania avenue.   | 440          |              | 2,270    |                         |          |                       |          |                |                         |                  | 1883                               |
| First street, from Pennsylvania avenue to F street.....                  | 2,240        | { 56<br>40 } |          |                         | 7,215    |                       | a 527    | 590            |                         | { 1892<br>1879 } | 1895                               |
| First street, from F to H.....                                           | 620          | 32           |          |                         | 1,427    |                       |          |                |                         | 1879             |                                    |
| First street, from H to Defrees.....                                     | 170          | 32           |          | 700                     |          |                       |          |                |                         | 1882             |                                    |
| First street, from Defrees to I.....                                     | 150          | 32           |          |                         | 535      |                       |          |                |                         | 1877             |                                    |
| First street, from I to K.....                                           | 380          | 32           | 1,191    |                         |          |                       |          |                |                         | 1882             |                                    |
| First street, from K to Pierce.....                                      | 686          | 32           | 3,051    |                         |          |                       |          |                |                         | 1890             |                                    |
| First street, from Pierce to Florida avenue.....                         | 2,504        | 32           | b 1,158  |                         |          |                       |          |                | 7,791                   | 1894             |                                    |
| Second street, from Pennsylvania avenue to Indiana avenue.               | 800          | 40           |          |                         | 3,693    |                       |          |                |                         | 1897             |                                    |
| Second street, from Indiana avenue to I street.....                      | 2,900        | 40           | 10,452   |                         |          |                       |          |                |                         | 1891             |                                    |
| Kirby street, between First and Third, M and N.....                      | 480          | 32           |          |                         |          |                       |          |                | 1,760                   |                  |                                    |
| Third street, from center of Botanical Garden to Penn-sylvania avenue.   | 500          |              |          |                         |          | 2,230                 |          |                |                         | 1881             |                                    |
| a Vitrified brick.                                                       |              |              |          |                         |          |                       |          |                |                         |                  |                                    |

a Vitrified brick.

b Paved from O to P.

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.

| Locality.                                                                      | Carriageway.          |        |          |                        |          |                       |          |                |                         |             | Resurfaced; originally paved with— |
|--------------------------------------------------------------------------------|-----------------------|--------|----------|------------------------|----------|-----------------------|----------|----------------|-------------------------|-------------|------------------------------------|
|                                                                                | Length.               | Width. | Asphalt. | Coal tar and concrete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved.  | Year paved. | Year resurfaced.                   |
| Third street, from Pennsylvania avenue to D street.....                        | <i>Feet.</i><br>1,130 | 32     | 436      |                        | 4,231    |                       |          |                | <i>Sq. yds.</i><br>1880 | 1880        |                                    |
| Third street, from intersection of D.....                                      | 32                    | 32     | 436      |                        |          |                       |          |                |                         | 1880        | 1883<br>1884                       |
| Third street, from Indiana avenue to L street.....                             | 3,260                 | 40     | 16,359   |                        |          |                       |          |                |                         | 1875        | Coal tar.                          |
| Third street, from Indiana avenue to New York avenue.....                      | 500                   | 40     | 2,685    |                        |          |                       |          |                |                         | 1875        |                                    |
| Third street, from New York avenue to P street.....                            | 950                   | 35     | 4,177    |                        |          |                       |          |                |                         | 1893        |                                    |
| Third street, from P to Florida avenue.....                                    | 1,207                 | 35     |          |                        |          |                       |          |                | 4,706                   |             |                                    |
| Fourth street, from Indiana avenue to New York avenue.....                     | 3,610                 | 32     | 3,573    | 10,719                 |          |                       |          |                |                         | 1872        | Do.                                |
| Fourth street, from New York avenue to M street.....                           | 250                   | 32     |          |                        |          | 647                   |          |                |                         | 1873        |                                    |
| Fourth street, from M to New Jersey avenue.....                                | 1,170                 |        |          |                        | 2,401    |                       |          |                |                         | 1891        |                                    |
| Fourth street, from New Jersey avenue to Florida avenue.....                   | 1,530                 | 30     | 5,594    |                        |          |                       |          |                |                         | 1891        |                                    |
| Fourth and a-half street, from center of Mall to Pennsylvania avenue, (a)..... | 720                   | 55     | 2,106    | 1,534                  |          |                       |          |                |                         | 1886        |                                    |
| Fourth and a-half street, from Pennsylvania avenue to D street.....            | 760                   | 50     |          |                        |          |                       |          |                |                         | 1889        |                                    |
| Fifth street, from D to G.....                                                 | 1,240                 | 46     | 3,341    |                        |          |                       |          | 4,549          |                         |             |                                    |
| Fifth street, from G to New York avenue.....                                   | 930                   | 32     |          | 7,389                  |          |                       |          |                |                         | 1885        | Do.                                |
| Fifth street, from New York avenue to O street.....                            | 1,820                 | 32     | 5,686    |                        |          |                       |          |                |                         | 1873        | 1884<br>1886<br>1875               |
| Fifth street, from O to Q.....                                                 | 830                   | 32     | 3,123    |                        |          |                       |          |                |                         | 1879        |                                    |
| Fifth street, from Q to Florida avenue.....                                    | 1,300                 | 32     | 4,436    |                        |          |                       |          |                |                         | 1889        |                                    |
| Sixth street, from center of Mall to Missouri avenue.....                      | 970                   | 60     |          |                        |          | 3,353                 |          |                |                         |             |                                    |
| Sixth street, from Missouri avenue to Louisiana avenue.....                    | 530                   | 60     | 5,078    |                        |          |                       |          |                |                         | 1885        | Do.                                |
| Sixth street, from Louisiana avenue to E street.....                           | 340                   | 32     | 2,791    | 2,196                  |          |                       |          |                |                         | 1877        | Asphalt.                           |
| Sixth street, from E to F.....                                                 | 370                   | 32     | 1,313    |                        |          |                       |          |                |                         | 1889        | Surface asphalt binder.            |
| Sixth street, from F to G.....                                                 | 250                   | 32     |          |                        | 975      |                       |          |                |                         | 1880        |                                    |
| Sixth street, from G to New York avenue.....                                   | 1,790                 | 32     |          | 6,896                  |          |                       |          |                |                         | 1887        |                                    |
| Sixth street, from New York avenue to Florida avenue.....                      | 4,240                 | 35     | 16,636   |                        |          |                       |          |                |                         | 1880        |                                    |

a New, Missouri avenue to Pennsylvania avenue.



|                                                                                         |        |    |        |       |  |  |  |       |      |
|-----------------------------------------------------------------------------------------|--------|----|--------|-------|--|--|--|-------|------|
| Madison street, between Sixth and Seventh, M and N                                      | 540    | 25 | 1,538  |       |  |  |  | 1889  |      |
| Marble street, between Sixth and Seventh, P and R                                       | 1,010  | 26 | 2,861  |       |  |  |  | 1889  |      |
| Wilkes street, between Sixth and Seventh, S and T                                       | 500    | 20 |        |       |  |  |  |       |      |
| Seventh street, from center of Mall to Pennsylvania avenue                              | 11,500 | 51 |        | 4,328 |  |  |  | 1,730 | 1878 |
| Seventh street, from Pennsylvania avenue to D street                                    | 450    | 51 | 1,579  |       |  |  |  |       | 1879 |
| Seventh street, Market square to D (west side)                                          | 260    |    |        | 520   |  |  |  |       | 1879 |
| Seventh street, from intersection of Louisiana avenue                                   | 5,870  | 49 |        |       |  |  |  |       | 1879 |
| Seventh street, from D to Q                                                             | 1,860  | 51 |        |       |  |  |  | 3,214 | 1882 |
| Seventh street, from intersection of E to Q                                             | 700    | 51 |        |       |  |  |  |       | 1882 |
| Eight street, from Pennsylvania avenue to E street                                      | 330    | 51 |        |       |  |  |  |       | 1881 |
| Eight street, from E to F                                                               | 1,650  | 30 | 1,964  |       |  |  |  |       | 1883 |
| Eight street, from G to L                                                               | 1,070  | 30 | 4,880  |       |  |  |  |       | 1875 |
| Eight street, from L to N                                                               | 1,940  | 30 | 3,610  |       |  |  |  |       | 1883 |
| Eight street, from N to R                                                               | 530    | 30 | 6,493  |       |  |  |  |       | 1887 |
| Eight street, from R to S                                                               | 920    | 30 |        | 2,063 |  |  |  |       | 1888 |
| Eight street, from S to Florida avenue                                                  | 500    | 51 |        | 3,624 |  |  |  |       | 1879 |
| Ninth street, from B to Pennsylvania avenue                                             | 5,610  | 51 | 32,363 |       |  |  |  |       | 1892 |
| Ninth street, from Pennsylvania avenue to P street                                      | 670    | 51 | 1,538  |       |  |  |  |       | 1883 |
| Ninth street, from P to Rhode Island avenue                                             | 3,000  | 51 | 3,371  |       |  |  |  |       | 1884 |
| Ninth street, from Rhode Island avenue to Florida avenue                                |        | 51 | 6,147  |       |  |  |  |       | 1875 |
| Ninth street, from P to Florida avenue                                                  | 480    |    |        | 2,663 |  |  |  |       | 1873 |
| Columbia street, between Ninth and Tenth, Q and O                                       |        |    |        | 784   |  |  |  |       |      |
| Opera square, between Ninth and Tenth streets, Pennsylvania avenue and Louisiana avenue | 740    | 51 |        |       |  |  |  |       |      |
| Tenth street, from B to Pennsylvania avenue                                             | 366    | 45 | 2,062  |       |  |  |  |       | 1872 |
| Tenth street, from Pennsylvania avenue to E street                                      | 380    | 45 | 2,124  |       |  |  |  |       | 1885 |
| Tenth street, from E to F                                                               | 300    | 32 | 955    |       |  |  |  |       | 1879 |
| Tenth street, from F to G                                                               | 1,200  | 32 | 4,828  |       |  |  |  |       | 1880 |
| Tenth street, from G to K                                                               | 980    | 32 | 3,368  |       |  |  |  |       | 1875 |
| Tenth street, from K to M                                                               | 1,020  | 32 | 3,443  |       |  |  |  |       | 1880 |
| Tenth street, from M to O                                                               | 1,420  | 32 | 4,433  |       |  |  |  |       | 1881 |
| Tenth street, from O to R                                                               | 530    | 32 |        | 1,992 |  |  |  |       | 1883 |
| Tenth street, from R to S                                                               | 500    | 32 | 1,948  |       |  |  |  |       | 1887 |
| Tenth street, from S to T                                                               | 520    | 32 | 2,588  |       |  |  |  |       | 1891 |
| Tenth street, from T to U                                                               | 980    | 32 | 3,855  |       |  |  |  |       | 1895 |
| Tenth street, from U to Florida avenue                                                  | 580    | 55 | 2,300  |       |  |  |  |       |      |
| Eleventh street, from B to Pennsylvania avenue                                          | 430    | 55 |        |       |  |  |  |       |      |
| Eleventh street, from Pennsylvania avenue to E street                                   | 362    | 55 |        | 1,734 |  |  |  |       | 1872 |
| Eleventh street, from E to F                                                            | 266    | 55 |        | 1,214 |  |  |  |       | 1878 |
| Eleventh street, from F to G                                                            | 1,330  | 35 | 1,297  |       |  |  |  |       | 1879 |
| Eleventh street, from G to K                                                            |        | 35 |        | 3,866 |  |  |  |       | 1880 |

(Granite (west side).  
(Granite (east side).

Coal tar.

Do.

Do.

Widened to 45 feet.  
Do.

Do.

Cobble removed.

Resurfaced H to I.

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.

NORTHWEST—Continued.

[illegible]

[illegible]

TABLE H.—Statement of character and extent of street pavements July 1, 1893—Continued.

## NORTHWEST—Continued.

| Locality.                                                                | Carriageway. |        |          |                             |          |                          |          |                |                             |             | Resurfaced; originally paved with— |
|--------------------------------------------------------------------------|--------------|--------|----------|-----------------------------|----------|--------------------------|----------|----------------|-----------------------------|-------------|------------------------------------|
|                                                                          | Length.      | Width. | Asphalt. | Coal tar and con-<br>crete. | Granite. | Cobble and blue<br>rock. | Macadam. | Asphalt block. | Gravel and unim-<br>proved. | Year paved. |                                    |
|                                                                          | Feet.        |        | Sq. yds. | Sq. yds.                    | Sq. yds. | Sq. yds.                 | Sq. yds. | Sq. yds.       | Sq. yds.                    |             |                                    |
| Eighteenth street, from river to D.....                                  | 800          | 32     |          |                             |          |                          |          |                | Sq. yds.<br>2, 473          | 1892        |                                    |
| Eighteenth street, from D to E.....                                      | 360          | 32     | 1, 544   |                             |          |                          |          |                |                             | 1873        | 1878                               |
| Eighteenth street, from E to New York avenue.....                        | 200          | 32     | 1, 096   |                             |          |                          |          |                |                             | 1881        |                                    |
| Eighteenth street, from New York avenue to Pennsyl-<br>vania avenue..... | 1, 170       | 32     | 4, 895   |                             |          |                          |          |                |                             |             |                                    |
| Eighteenth street, from Pennsylvania avenue to K street.....             | 920          | 32     | 4, 515   |                             |          |                          |          |                |                             | 1872        | 1882                               |
| Eighteenth street, from K to L.....                                      | 400          | 32     |          |                             |          |                          |          | 1, 431         |                             | 1886        |                                    |
| Eighteenth street, from L to P.....                                      | 1, 950       | 32     | 7, 048   | 576                         |          |                          |          |                |                             | 1873        | { 1879 }<br>1897                   |
| Eighteenth street, from P to Q.....                                      | 600          | 32     | 1, 771   | 1, 764                      |          |                          |          |                |                             | 1887        | 1898                               |
| Eighteenth street, from Q to S.....                                      | 850          | 32     | 3, 150   |                             |          |                          |          |                |                             | 1891        |                                    |
| Eighteenth street, from S to Florida avenue.....                         | 940          | 32     | 3, 823   |                             |          |                          |          |                |                             | 1893        |                                    |
| Nineteenth street, from river to E.....                                  | 1, 280       | 32     |          |                             |          |                          |          |                | 4, 200                      |             |                                    |
| Nineteenth street, from E to New York avenue.....                        | 225          | 32     |          |                             |          | 1, 028                   |          |                |                             |             |                                    |
| Nineteenth street, from New York avenue to Pennsyl-<br>vania avenue..... | 1, 370       | 32     |          | 6, 421                      |          |                          |          |                |                             | 1873        | 1878                               |
| Nineteenth street, from Pennsylvania avenue to K street.....             | 655          | 32     |          |                             | 3, 170   |                          |          |                |                             | 1880        |                                    |
| Nineteenth street, from K to M.....                                      | 1, 010       | 32     |          |                             | 3, 726   |                          |          |                |                             | 1885        |                                    |
| Nineteenth street, from M to N.....                                      | 520          | 32     |          |                             | 1, 894   |                          |          |                |                             | 1882        |                                    |
| Nineteenth street, from N to Dupont circle.....                          | 570          | 32     | 2, 409   |                             |          |                          |          |                |                             | 1881        | 1895                               |
| Nineteenth street, from Dupont circle to Florida avenue.....             | 2, 000       | 32     | 2, 841   | 4, 757                      |          |                          |          |                |                             | 1873        | { 1878 }<br>1891                   |
| Twentieth street, from river to E street.....                            | 1, 450       | 32     |          |                             |          |                          |          |                | 5, 150                      |             |                                    |
| Twentieth street, from E to Pennsylvania avenue.....                     | 1, 550       | 32     |          | 5, 579                      |          |                          |          |                |                             | 1873        | 1878                               |
| Twentieth street, from Pennsylvania avenue to I street.....              | 180          | 32     | 931      |                             |          |                          |          |                |                             | 1879        |                                    |
| Twentieth street, from I to K.....                                       | 375          | 32     |          | 1, 350                      |          |                          |          |                |                             | 1879        |                                    |
| Twentieth street, from K to P.....                                       | 2, 425       | 32     | 8, 200   |                             |          |                          |          |                |                             | 1873        | { 1894 }<br>1895                   |
| Twentieth street, from P to Connecticut avenue.....                      | 315          | 32     | 2, 167   |                             |          |                          |          |                |                             | 1873        | 1895                               |
| Twentieth street, from R to S.....                                       | 508          | 32     | 1, 995   |                             |          |                          |          |                |                             | 1873        | 1895                               |
|                                                                          |              |        |          |                             |          |                          |          |                |                             |             | Paved on cobble.                   |

|                                                              | 300   | 32  | 1,066  |        | 1872  |
|--------------------------------------------------------------|-------|-----|--------|--------|-------|
| Twenty-first street, from S to Florida avenue.               | 360   | 32  |        |        | 1883  |
| Hopkins street, between Twentieth and Twenty-first, O and P. | 350   | 32  | 949    |        |       |
| Twenty-first street, from river to E street.                 | 1,500 | 32  |        |        |       |
| Twenty-first street, from E to Pennsylvania avenue.          | 1,850 | 32  | 6,101  |        | 3,062 |
| Twenty-first street, from Pennsylvania avenue to K street.   | 1,380 | 32  | 1,384  |        | 1878  |
| Twenty-first street, from K to Q.                            | 2,770 | 32  | 10,892 |        | 1875  |
| Twenty-first street, from Q to Hillier.                      | 270   | 32  |        |        | 1891  |
| Twenty-first street, from Hillier to K.                      | 250   | 32  |        | 6,956  | 1884  |
| Twenty-first street, from K to Florida avenue.               | 450   | 32  | 988    |        | 1887  |
| Twenty-second street, from river to Virginia avenue.         | 1,300 | 32  | 1,483  |        | 1890  |
| Twenty-second street, from Virginia avenue to F street.      | 260   | 32  |        |        |       |
| Twenty-second street, from F to G.                           | 315   | 32  |        |        |       |
| Twenty-second street, from G to Pennsylvania avenue.         | 1,300 | 32  | 1,407  |        | 1872  |
| Twenty-second street, from Pennsylvania avenue to M street.  | 1,000 | 32  | 3,119  |        | 1893  |
| Twenty-second street, from M to O.                           | 1,150 | 32  | 1,492  |        | 1873  |
| Twenty-second street, from O to P.                           | 230   | 32  | 2,852  |        | 1885  |
| Twenty-second street, from P to Florida avenue.              | 450   | 32  |        |        |       |
| Twenty-third street, from Upper Water to E.                  | 1,450 | 32  |        |        |       |
| Twenty-third street, from E to Virginia avenue.              | 1,050 | 32  |        |        |       |
| Twenty-third street, from Virginia avenue to I street.       | 400   | 32  |        |        |       |
| Twenty-third street, from I to Pennsylvania avenue.          | 720   | 32  | 3,750  |        | 1874  |
| Twenty-third street, from Pennsylvania avenue to M street.   | 950   | 32  |        | 2,387  | 1891  |
| Twenty-fourth street, from E to G.                           | 780   | 32  |        |        | 1886  |
| Twenty-fourth street, from G to Pennsylvania avenue.         | 1,376 | 32  |        |        |       |
| Twenty-fourth street, from Pennsylvania avenue to M street.  | 660   | 32  |        |        |       |
| Twenty-fifth street, from M to Rock Creek.                   | 1,160 | 32  |        |        |       |
| Twenty-fifth street, from river to Virginia avenue.          | 1,700 | 32  |        |        |       |
| Twenty-fifth street, from Virginia avenue to K street.       | 1,100 | 32  | 3,739  |        | 3,099 |
| Twenty-fifth street, from K to Pennsylvania avenue.          | 380   | 32  | 1,163  |        | 2,069 |
| Twenty-fifth street, from Pennsylvania avenue to M street.   | 530   | 32  | 1,693  |        | 1878  |
| Twenty-fifth street, from M to Rock Creek.                   | 1,140 | 32  |        |        | 1872  |
| Twenty-sixth street, from river to G street.                 | 1,320 | 32  |        |        |       |
| Twenty-sixth street, from G to K.                            | 1,400 | 32  |        |        |       |
| Twenty-sixth street, from K to Pennsylvania avenue.          | 470   | 32  | 1,680  |        | 3,908 |
| Twenty-sixth street, from Pennsylvania avenue to M street.   | 350   | 32  | 919    |        | 5,735 |
| Twenty-sixth street, from M to Rock Creek.                   | 220   | 32  |        |        | 1888  |
| Twenty-seventh street, from E to L street (N. C.).           | 2,750 | 32  |        |        | 1890  |
| Twenty-eighth street, from Rock Creek to K street.           | 300   | 35  |        |        | 1882  |
| B street, from North Canal to First.                         | 820   | 35  |        |        | 1877  |
| B street, from First to Third.                               | 810   | 35  |        |        |       |
| B street, from Sixth to Seventh.                             | 500   | 56  |        |        |       |
| B street, from Seventh to Twelfth.                           | 1,090 | 101 |        |        |       |
|                                                              |       |     | 18,686 | 62,374 | 800   |
|                                                              |       |     |        |        | 8,051 |
|                                                              |       |     |        |        | 1,066 |
|                                                              |       |     |        |        | 1873  |
|                                                              |       |     |        |        | 1880  |
|                                                              |       |     |        |        | 1890  |
|                                                              |       |     |        |        | 1873  |

b Vitrified block.

a Permit work.

TABLE H.—Statement of character and extent of street pavements July 1, 1893—Continued.  
NORTHWEST—Continued.

| Locality.                                              | Carriageway.   |        |          |                        |          |                       |          |                |                        |             | Resurfaced; originally paved with— |
|--------------------------------------------------------|----------------|--------|----------|------------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                        | Length.        | Width. | Asphalt. | Coal tar and concrete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| B street, from Twelfth to Seventeenth.....             | Feet.<br>3,150 | 60     |          |                        |          |                       |          |                |                        | 1874        |                                    |
| B street, from Seventeenth to Twenty-third.....        | 3,050          | 35     |          |                        |          |                       |          |                | 18,080                 |             |                                    |
| Little B street, from Tenth to Twelfth.....            | 560            | 46     |          |                        |          |                       |          |                |                        |             |                                    |
| C street, from North Capitol to First.....             | 700            | 63     |          |                        |          |                       |          |                |                        | 1879        |                                    |
| C street, from Second to Third.....                    | 450            | 32     |          |                        |          |                       |          |                |                        | 1882        |                                    |
| C street, from Third to Four and a-half.....           | 610            | 30     | 2,054    |                        | 1,201    |                       |          |                |                        | 1882        |                                    |
| C street, from Four and a-half to Seventh.....         | 1,000          | 42     | 4,604    |                        |          |                       |          |                |                        | 1885        |                                    |
| C street, from Seventh to Eighth.....                  | 250            | 46     |          |                        | 1,183    |                       |          |                |                        | 1879        |                                    |
| C street, from Ninth to Tenth.....                     | 470            | 40     |          |                        | 1,656    |                       |          |                |                        | 1872        |                                    |
| C street, from Tenth to Fifteenth.....                 | 1,420          | 40     | 903      |                        |          |                       |          |                |                        | 1868        |                                    |
| C street, from Fifteenth to Twenty-third.....          | 3,000          | 32     |          |                        |          |                       |          |                | 10,453                 |             |                                    |
| D street, from North Capitol to New Jersey avenue..... | 470            | 35     |          |                        | 1,617    |                       |          |                |                        | 1894        |                                    |
| D street, from New Jersey avenue to Fourth street..... | 1,470          | 36     | 3,412    | 406                    |          |                       |          |                |                        | 1875        | Coal tar.                          |
| D street, from Fifth to Sixth.....                     | 110            | 35     |          |                        |          |                       |          |                |                        | 1889        |                                    |
| D street, from Sixth to Tenth.....                     | 1,540          | 36     | 936      |                        | 5,342    |                       |          |                |                        | 1879        | Asphalt on granite.                |
| D street, from Twelfth to Fourteenth.....              | 990            | 40     |          |                        |          | 3,904                 |          |                |                        | 1873        |                                    |
| D street, from Fourteenth to Fifteenth.....            | 370            | 40     | 1,675    |                        |          |                       |          |                |                        | 1885        | Asphalt on cobble.                 |
| D street, from Fifteenth to Eighteenth.....            | 660            | 35     | 2,788    |                        |          |                       |          |                |                        | 1891        |                                    |
| D street, from Eighteenth to Twenty-third.....         | 2,200          | 32     |          |                        |          |                       |          |                | 7,825                  |             |                                    |
| E street, from North Capitol to New Jersey avenue..... | 620            | 35     | 2,494    |                        |          |                       |          |                |                        | 1887        | Coal tar.                          |
| E street, from North Capitol to New Jersey avenue..... | 1,300          | 35     | 4,932    |                        |          |                       |          |                |                        | 1879        |                                    |
| E street, from New Jersey avenue to Fourth street..... | 2,160          | 35     | 9,323    |                        |          |                       |          |                |                        | 1889        |                                    |
| E street, from Fifth to Eleventh.....                  |                |        |          |                        |          |                       |          |                |                        | 1889        | Asphalt.                           |
| E street, from Eleventh to Thirteenth.....             | 580            | 40     |          |                        |          |                       |          |                |                        | 1878        |                                    |
| E street, from Thirteenth to Fourteenth.....           | 300            | 35     |          |                        | 2,487    |                       |          |                |                        | 1895        |                                    |
| E street, from Pennsylvania avenue to Fifteenth.....   | 450            | 35     | 3,031    |                        |          |                       |          | 1,093          |                        | 1878        | Asphalt block.                     |
| E street, from Seventeenth to Nineteenth.....          | 1,030          | 35     |          |                        |          |                       |          |                |                        | 1889        | Asphalt on cobble.                 |
| E street, from Nineteenth to Twenty-second.....        | 1,400          | 35     |          |                        |          |                       |          |                |                        | 1873        |                                    |
| E street, from Twenty-second to river.....             | 2,050          | 35     |          |                        |          |                       |          |                |                        | 1872        |                                    |
| F street, from North Capitol to New Jersey avenue..... | 750            | 35     |          | 2,962                  |          | 5,500                 |          |                | 8,000                  | 1873        |                                    |



TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.  
NORTHWEST—Continued.

| Locality.                                                  | Carriageway. |        |          |                         |               |                       |               |                |                         |             | Resurfaced; originally paved with— |                  |
|------------------------------------------------------------|--------------|--------|----------|-------------------------|---------------|-----------------------|---------------|----------------|-------------------------|-------------|------------------------------------|------------------|
|                                                            | Length.      | Width. | Asphalt. | Coal tar and con-crete. | Granite.      | Cobble and blue rock. | Macadam.      | Asphalt block. | Gravel and unim-proved. | Year paved. |                                    | Year resurfaced. |
| I street, from Tenth to Eleventh.....                      | Feet.<br>200 | 32     | 714      | Sq. yds.<br>3,700       | Sq. yds.<br>— | Sq. yds.<br>—         | Sq. yds.<br>— | Sq. yds.<br>—  | Sq. yds.<br>—           | 1886        | 1878                               | Coal tar.        |
| I street, from Eleventh to Thirteenth.....                 | 670          | 40     | 3,700    | 4,632                   | —             | —                     | —             | —              | —                       | 1872        | 1894                               | Do.              |
| I street, from Thirteenth to Fifteenth.....                | 1,000        | 40     | 4,632    | 8,322                   | —             | —                     | —             | —              | —                       | 1874        | 1894                               | Do.              |
| I street, from Fifteenth to Seventeenth.....               | 1,500        | 48     | 8,322    | 2,672                   | —             | —                     | —             | —              | —                       | 1873        | 1878                               | Do.              |
| I street, from Seventeenth to Eighteenth.....              | 640          | 40     | 2,672    | 6,296                   | —             | —                     | —             | —              | —                       | 1880        | 1880                               | Macadamized.     |
| I street, from Pennsylvania avenue to Twenty-third street. | 21,450       | 38     | 6,296    | —                       | —             | —                     | 1,500         | —              | —                       | 1891        | 1897                               | Macadamized.     |
| I street, from Twenty-third to Twenty-seventh.....         | 1,275        | 38     | 5,385    | —                       | —             | —                     | —             | —              | —                       | 1886        | 1886                               | Cobble.          |
| I street, from Eighteenth to Pennsylvania avenue.....      | 1,200        | 40     | 5,327    | —                       | —             | —                     | —             | —              | —                       | 1874        | 1874                               | Cobble.          |
| K street, from North Capitol to First.....                 | 871          | 50     | 3,984    | —                       | —             | 4,838                 | —             | —              | —                       | 1894        | 1894                               | Coal tar.        |
| K street, from First to Third.....                         | 6769         | 50     | 3,984    | 4,209                   | —             | —                     | —             | —              | —                       | 1874        | 1878                               | Coal tar.        |
| K street, from Third to Seventh.....                       | 1,820        | 50     | 4,175    | —                       | —             | —                     | —             | —              | —                       | 1881        | 1889                               | Do.              |
| K street, from Seventh to Ninth.....                       | 1,460        | 53     | 9,315    | —                       | —             | —                     | —             | —              | —                       | 1886        | 1886                               | Do.              |
| K street, from intersection of Vermont avenue.....         | —            | 30     | 717      | —                       | —             | —                     | —             | —              | —                       | 1889        | 1894                               | Do.              |
| K street, from Ninth to Eighteenth.....                    | 4,990        | 50     | 27,551   | —                       | —             | —                     | —             | —              | —                       | 1875        | 1893                               | Do.              |
| K street, from Eighteenth to Twenty-third.....             | 2,160        | 50     | 11,671   | —                       | 619           | —                     | —             | —              | —                       | 1880        | 1896                               | Do.              |
| K street, from Twenty-third to Twenty-eighth.....          | 1,810        | 50     | —        | 12,571                  | —             | —                     | —             | —              | —                       | 1880        | 1896                               | Do.              |
| L street, from North Capitol to New Jersey avenue.....     | 1,400        | 32     | 4,643    | —                       | —             | —                     | —             | —              | —                       | 1874        | 1874                               | Do.              |
| L street, from New Jersey avenue to Fourth street.....     | 550          | 32     | 1,592    | —                       | —             | —                     | —             | —              | —                       | 1870        | 1870                               | Do.              |
| L street, from Fourth to Fifth.....                        | 750          | 32     | 2,665    | —                       | —             | —                     | —             | —              | —                       | 1877        | 1877                               | Do.              |
| L street, from Fifth to Sixth.....                         | 240          | 32     | —        | —                       | —             | —                     | —             | —              | —                       | 1877        | 1877                               | Do.              |
| L street, from Sixth to Seventh.....                       | 4,040        | 32     | 21,203   | —                       | —             | —                     | —             | —              | —                       | 1883        | 1887                               | Do.              |
| L street, from Eighth to Seventeenth.....                  | 2,400        | 32     | —        | —                       | —             | —                     | —             | —              | —                       | 1883        | 1889                               | Do.              |
| L street, from Connecticut avenue to Twentieth street..... | 1,390        | 32     | 2,645    | —                       | —             | —                     | —             | —              | —                       | 1877        | 1891                               | Do.              |
| L street, from Twentieth to Twenty-fifth.....              | 2,345        | 32     | 8,141    | —                       | —             | —                     | —             | —              | —                       | 1883        | 1883                               | Do.              |
| L street, from Seventh to Connecticut avenue.....          | 380          | 32     | —        | 1,628                   | —             | —                     | —             | —              | —                       | 1883        | 1883                               | Do.              |
| L street, from Twentieth to Twenty-fifth.....              | 210          | 32     | 483      | —                       | —             | —                     | —             | —              | —                       | 1889        | 1889                               | Do.              |
| L street, from Twenty-fifth to Twenty-sixth.....           | 335          | 32     | 1,175    | —                       | —             | —                     | —             | —              | —                       | 1889        | 1889                               | Do.              |
| L street, from Twenty-sixth to Twenty-seventh.....         | —            | 32     | —        | —                       | —             | —                     | —             | —              | —                       | 1889        | 1889                               | Do.              |



| Do Sales street, between L and M, Seventeenth and Connecticut avenue.         | 550   | 32 | 2,493  | 1875  | Do.      |
|-------------------------------------------------------------------------------|-------|----|--------|-------|----------|
| Pleasant street, between L and M, New Jersey avenue and North Capitol street. | 1,500 | 40 | 5,535  | 1889  | Asphalt. |
| M street, from North Capitol to First.                                        | 870   | 35 | 3,067  | 1894  |          |
| M street, from First to New Jersey avenue.                                    | 720   | 35 | 2,507  | 1890  |          |
| M street, from New Jersey avenue to Sixth street.                             | 1,400 | 35 | 5,564  | 1880  |          |
| M street, from Sixth to Fourteenth.                                           | 3,200 | 35 | 13,117 | 1879  |          |
| M street, from Fourteenth to Sixteenth.                                       | 1,100 | 40 | 4,573  | 1881  |          |
| M street, from Sixteenth to Eighteenth.                                       | 1,300 | 40 | 4,532  | 1873  |          |
| M street, from Eighteenth to New Hampshire avenue.                            | 1,570 | 40 | 6,084  | 1889  |          |
| M street, from New Hampshire avenue to Rock Creek.                            | 2,125 | 40 | 9,171  | 1879  |          |
| Jefferson street, between M and N, Eighteenth and Nineteenth.                 | 450   | 27 |        | 1882  |          |
| Edge street, between M and N, Fourth and Fifth.                               | 760   | 30 | 2,518  | 1884  |          |
| Ward place, between New Hampshire avenue and Twenty-second street, M and N.   | 545   | 25 |        | 1879  |          |
| N street, from North Capitol to New Jersey avenue.                            | 1,600 | 32 | 5,642  | 1892  |          |
| N street, from New Jersey avenue to Fifth street.                             | 800   | 32 | 3,311  | 1893  |          |
| N street, from Fifth to Ninth.                                                | 1,300 | 32 | 4,454  | 1800  |          |
| N street, from Ninth to Fourteenth.                                           | 2,190 | 32 | 6,802  | 1883  |          |
| N street, from Fourteenth to Sixteenth.                                       | 910   | 32 | 3,249  | 1880  |          |
| N street, from Sixteenth to New Hampshire avenue b.                           | 2,245 | 32 | 6,556  | 1881  |          |
| N street, from New Hampshire avenue to Twenty-first street.                   | 260   | 32 | 517    | 1873  |          |
| N street, from Twenty-first to Twenty-second.                                 | 620   | 32 | 2,081  | 1875  |          |
| N street, from Twenty-second to Twenty-fourth.                                | 710   | 32 | 2,196  | 1803  |          |
| N street, from Twenty-fourth to Rock Creek.                                   | 810   | 32 |        | 1892  |          |
| Sunderland place, between N and O, Nineteenth and Twentieth streets.          | 380   | 30 |        | 2,394 |          |
| Morgan street, between M and N, First and Third.                              | 380   | 30 | 1,307  | 1885  |          |
| O street, from North Capitol to New Jersey avenue.                            | 1,830 | 32 |        | 1892  |          |
| O street, from New Jersey avenue to Thirteenth street.                        | 3,700 | 32 | 5,237  | 6,172 |          |
| O street, from Thirteenth to Vermont avenue.                                  | 130   | 32 | 481    | 1875  |          |
| O street, from Thirteenth to Sixteenth.                                       | 520   | 32 | 1,663  | 1881  |          |
| O street, from Sixteenth to Seventeenth.                                      | 520   | 32 | 1,697  | 1883  |          |
| O street, from Seventeenth to Twenty-first.                                   | 500   | 32 | 2,011  | 1875  |          |
| O street, from Twenty-first to Twenty-second.                                 | 600   | 32 | 2,398  | 1887  |          |
| P street, from Twenty-second to Rock Creek.                                   | 200   | 32 |        | 1889  |          |
| P street, from North Capitol to Fourth.                                       | 1,970 | 32 | 7,135  | 693   |          |
| P street, from Fourth to Ninth.                                               | 2,080 | 32 | 5,166  | 1891  |          |
| P street, from Ninth to Fifteenth.                                            | 2,560 | 32 | 8,156  | 1884  |          |
| P street, from Fifteenth to Eighteenth.                                       | 1,500 | 32 | 8,076  | 1884  |          |
| P street, from Eighteenth to Twentieth.                                       | 450   | 32 | 1,295  | 1884  |          |
| P street, from Twentieth to Twenty-second.                                    | 1,120 | 40 | 3,481  | 1873  |          |
| P street, from Twenty-second to Rock Creek.                                   | 300   | 40 | 1,079  | 1879  |          |

a Permit work.

b Asphalt on cobble.

c Asphalt on macadam.

d 1898, Seventeenth to Eighteenth.

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.

## NORTHWEST—Continued.

| Locality.                                                      | Carriageway. |        |                   |                        |          |                       |          |                |                        |             | Resurfaced; originally paved with— |
|----------------------------------------------------------------|--------------|--------|-------------------|------------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                                | Length.      | Width. | Asphalt.          | Coal tar and concrete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Graded and unimproved. | Year paved. |                                    |
| Madison street, between Seventeenth and Eighteenth, P and Q.   | Feet.<br>807 | 25     | Sq. yds.<br>2,271 |                        |          |                       |          |                | Sq. yds.               | 1893        | 1892                               |
| Sampson street, between Fourteenth and Fifteenth, P and Q.     | 690          | 24     | 1,733             |                        |          |                       |          |                |                        | 1890        |                                    |
| Franklin street, between P and Q, New Jersey avenue and Fifth. | 630          | 30     |                   |                        |          |                       |          |                | 1,667                  |             |                                    |
| Bates street, between P and Q, North Capitol and First.        | 840          | 25     |                   |                        |          |                       |          |                | 1,800                  | 1875        |                                    |
| Madison street, between P and Q, Fifteenth and Seventeenth.    | 940          | 25     |                   | 2,674                  |          |                       |          |                |                        |             |                                    |
| Q street, from Florida avenue to Third.                        | 1,470        | 32     |                   |                        |          |                       |          |                | 5,151                  |             |                                    |
| Q street, from Third to New Jersey avenue.                     | 420          | 32     | 1,812             |                        |          |                       |          |                |                        | 1890        |                                    |
| Q street, from New Jersey avenue to Fifth.                     | 560          | 32     | 2,031             |                        |          |                       |          |                |                        | 1888        |                                    |
| Q street, from Fifth to Sixth.                                 | 270          | 32     | 833               |                        |          |                       |          |                |                        | 1890        |                                    |
| Q street, from Sixth to Rhode Island avenue.                   | 1,300        | 32     | 2,104             | 2,655                  |          |                       |          |                |                        | 1887        | 1895                               |
| Q street, from Rhode Island avenue to Vermont avenue.          | 900          | 32     | 2,453             |                        |          |                       |          |                |                        | 1889        |                                    |
| Q street, from Vermont avenue to Fourteenth.                   | 850          | 32     | 2,806             |                        |          |                       |          |                |                        | 1883        |                                    |
| Q street, from Fourteenth to Sixteenth.                        | 1,250        | 32     | 2,338             | 2,468                  |          |                       |          |                |                        | 1874        | 1886<br>1891                       |
| Q street, from Sixteenth to Seventeenth.                       | 550          | 32     | 1,890             |                        |          |                       |          |                |                        | 1875        | 1889                               |
| Q street, from Seventeenth to Nineteenth.                      | 1,400        | 32     | 4,904             |                        |          |                       |          |                |                        | 1888        | 1895                               |
| Q street, from Nineteenth to Twentieth.                        | 300          | 32     |                   | 862                    |          |                       |          |                |                        | 1873        | 1873<br>1882                       |
| Q street, from Twentieth to Twenty-second.                     | 970          | 32     |                   | 2,541                  |          |                       |          |                |                        | 1886        |                                    |
| Q street, from Twenty-first to Massachusetts avenue.           | 80           |        |                   | 883                    |          |                       |          |                |                        | 1875        |                                    |
| Hwyer street, between Q and R, Twentieth and Twenty-first.     | 470          | 27     |                   |                        |          |                       |          |                | a 1,552                | 1884        |                                    |
| Warner street, between New Jersey avenue and Fifth, Q and R.   | 470          | 25     |                   |                        |          |                       |          |                | 1,333                  |             |                                    |
| Corcoran street, between Thirteenth and Fourteenth, Q and R.   | 554          | 30     | 2,067             |                        |          |                       |          |                |                        | 1887        | 1895                               |
| Corcoran street, between Fourteenth and Fifteenth, Q and R.    | 630          | 30     |                   | 2,129                  |          |                       |          |                |                        | 1875        |                                    |

|                                                                                    | 1,820 | 30    | 4,831 | 1,820 | 1888  |
|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|
| Corcoran street, between Fifteenth and New Hampshire avenue, Q and R.....          | 470   | 30    | 1,163 | ..... | 1890  |
| Corcoran street, between Eighteenth and Nineteenth, Q and R.....                   | ..... | ..... | ..... | ..... | ..... |
| R street, from Florida avenue to Seventh.....                                      | 2,410 | 32    | 7,551 | ..... | 1890  |
| R street, from Seventh to Ninth.....                                               | 530   | 32    | ..... | ..... | 1888  |
| R street, from Ninth to Fourteenth.....                                            | 2,220 | 32    | 7,638 | 1,602 | 1884  |
| R street, from Fourteenth to Sixteenth.....                                        | 1,250 | 32    | ..... | ..... | 1875  |
| R street, from Sixteenth to New Hampshire avenue.....                              | 1,140 | 32    | 3,918 | 4,502 | 1886  |
| R street, from New Hampshire avenue to Twentieth street.....                       | 1,150 | 32    | 3,498 | ..... | 1891  |
| R street, from Twentieth to Twenty-first.....                                      | 400   | 32    | ..... | ..... | ..... |
| R street, from Twenty-first to Florida avenue.....                                 | 250   | 32    | 735   | ..... | 1887  |
| Riggs street, between R and S, to Eighteenth and Nineteenth.....                   | 450   | 32    | ..... | 1,300 | 1893  |
| Riggs street, between R and S, to Sixteenth and Seventeenth.....                   | 500   | 30    | 1,620 | ..... | 1891  |
| Riggs street, between R and S, to Thirteenth and Fourteenth.....                   | 625   | 30    | ..... | 2,030 | 1886  |
| French street, between R and S, to Ninth and Tenth.....                            | 520   | 30    | 1,692 | ..... | 1889  |
| Riggs street, between R and S, to New Hampshire avenue and Nineteenth street.....  | 837   | 30    | 2,555 | ..... | 1897  |
| S street, from Florida avenue to Seventh street.....                               | 1,300 | 32    | 4,539 | ..... | 1894  |
| S street, from Seventh to Eleventh.....                                            | 1,400 | 32    | 5,047 | ..... | 1889  |
| S street, from Eleventh to Fourteenth.....                                         | 1,300 | 32    | 4,240 | 995   | 1875  |
| S street, from Fourteenth to Sixteenth.....                                        | 1,160 | 32    | 1,757 | 2,457 | 1873  |
| S street, from Sixteenth to New Hampshire avenue.....                              | 735   | 32    | 2,681 | ..... | 1889  |
| S street, from New Hampshire avenue to Twentieth street.....                       | 1,560 | 32    | 5,195 | ..... | 1894  |
| S street, from Twentieth to Connecticut avenue.....                                | 300   | 32    | 1,077 | ..... | 1889  |
| Oregon avenue, between S and T, to New Hampshire avenue and Eighteenth street..... | 1,150 | 30    | 2,484 | ..... | 1895  |
| Oregon avenue, from Eighteenth to Nineteenth.....                                  | 402   | 30    | ..... | ..... | ..... |
| Pierce street, between S and T, to Fourteenth and Fifteenth.....                   | 600   | 30    | 2,154 | 1,340 | 1873  |
| Pierce street, between S and T, to Fifteenth and Sixteenth.....                    | 400   | 30    | 1,366 | ..... | 1886  |
| Pierce street, between S and T, to Sixteenth and Seventeenth.....                  | 520   | 40    | ..... | ..... | ..... |
| Westminster street, between S and T, to Ninth and Tenth.....                       | 535   | 30    | 1,749 | 1,320 | 1893  |
| T street, from Florida avenue to Ninth street.....                                 | 800   | 32    | 2,388 | ..... | 1897  |
| T street, from Ninth to Tenth.....                                                 | 535   | 32    | 1,766 | ..... | 1891  |
| T street, from Tenth to Fourteenth.....                                            | 1,600 | 32    | 4,256 | ..... | 1893  |
| T street, from Fourteenth street to New Hampshire avenue.....                      | 1,920 | 32    | 5,147 | ..... | 1895  |
| T street, from New Hampshire avenue to Florida avenue.....                         | 1,517 | 32    | 5,400 | ..... | ..... |
| Willard street, between T and U, to Seventeenth and Eighteenth.....                | 870   | 25    | ..... | 2,360 | ..... |

a Permit work.

**a Permit work.**

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.

NORTHWEST—Continued.

| Locality.                                                      | Carriageway. |        |                   |                   |          |                       |          |                |                        |             | Resurfaced; originally paved with— |
|----------------------------------------------------------------|--------------|--------|-------------------|-------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                                | Length.      | Width. | Asphalt.          | Coal tar and com. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| Caroline street, between T and U, to Fifteenth and Sixteenth.  | Feet.<br>520 | 24     | Sq. yds.<br>1,325 |                   |          |                       |          |                | Sq. yds.               | 1891        | .....                              |
| Wallach street, between T and U, to Thirteenth and Fourteenth. | 610          | 30     |                   |                   |          |                       |          | a 2,075        |                        | 1886        | .....                              |
| U street, from Ninth to Tenth.                                 | 570          | 32     | 2,201             |                   |          |                       |          |                |                        | 1891        | .....                              |
| U street, from Tenth to Fourteenth.                            | 1,560        | 45     | 4,898             |                   |          |                       |          |                |                        | 1893        | .....                              |
| U street, from Fourteenth to Sixteenth.                        | 1,360        | 45     | 3,310             |                   |          |                       |          |                |                        | 1891        | .....                              |
| U street, from Sixteenth to Florida avenue.                    | 1,367        | 45     | 4,125             |                   |          |                       |          |                |                        | 1897        | .....                              |
| Seaton street, between U and V, to Seventeenth and Eighteenth. | 500          | 20     |                   |                   |          |                       |          |                | 1,822                  | .....       | .....                              |
| V street, from Vermont avenue to Thirteenth street.            | 1,348        | 32     |                   |                   |          |                       |          |                | 4,211                  | .....       | .....                              |
| V street, from Thirteenth to Fifteenth.                        | 1,357        | 32     | 4,543             |                   |          |                       |          |                |                        | 1894        | .....                              |
| V street, from Fifteenth street to Florida avenue.             | 1,395        | 32     |                   |                   |          |                       |          |                | 4,541                  | 1897        | .....                              |
| W street, from Florida avenue to Florida avenue.               | 2,470        | 32     | 51,358            |                   |          |                       |          |                | 5,883                  | 1895        | .....                              |
| Connecticut avenue, intersection of Florida avenue.            |              |        | 140               |                   |          |                       |          |                |                        | 1895        | .....                              |
| Connecticut avenue, from H street to Florida avenue.           | 6,000        | 50     | 36,246            |                   |          |                       |          |                |                        | 1873        | .....                              |
| Florida avenue, from Q street to R.                            | 415          | 46     | 2,612             |                   |          |                       |          |                |                        | 1895        | .....                              |
| Florida avenue, from R street to Connecticut avenue.           | 367          | 48     |                   |                   |          |                       | 1,876    |                |                        | 1895        | .....                              |
| Intersection of Connecticut avenue and S street.               |              |        | 2,064             |                   |          |                       |          |                |                        | 1895        | .....                              |
| Florida avenue, from Connecticut avenue to Eighteenth street.  | 1,500        | 46     | 5,080             |                   |          |                       |          |                |                        | 1895        | .....                              |
| Florida avenue, from Eighteenth street to Ninth.               | 7,074        |        |                   |                   |          |                       | 39,315   |                |                        | 1875        | .....                              |
| Florida avenue, from Ninth street to Seventh.                  | 650          | 45     |                   |                   |          |                       |          |                |                        | 1876        | .....                              |
| Florida avenue, from Seventh street to New Jersey avenue.      | 1,250        | 46     | 7,208             | 2,304             |          |                       |          |                |                        | 1874        | .....                              |
| Florida avenue, from New Jersey avenue to Fourth street.       | 600          | 46     | 3,405             |                   |          |                       |          |                |                        | 1888        | .....                              |
| Florida avenue, from Fourth street to First.                   | 1,820        | 46     |                   |                   |          |                       | 6,563    |                |                        | 1890        | .....                              |
|                                                                |              |        |                   |                   |          |                       |          |                |                        | 1896        | .....                              |

Coal tar.





|                                                                     |        |        |        |         |        |                 |
|---------------------------------------------------------------------|--------|--------|--------|---------|--------|-----------------|
| Rhode Island avenue, from Thirtieth to Ninth street.....            | 1, 200 | 9, 219 |        |         | 1892   |                 |
| Rhode Island avenue, from Ninth to Fifth street.....                | 1, 300 | 8, 120 |        |         | 1887   |                 |
| Rhode Island avenue, from Fifth street to New Jersey<br>avenue..... | 320    | 2, 313 |        |         | 1888   |                 |
| Rhode Island avenue, from New Jersey to Florida<br>avenue.....      | 220    | 50     | 1, 146 |         | 1898   |                 |
| Virginia avenue, from B to E street.....                            | 2, 050 | 50     |        | 11, 400 |        |                 |
| Virginia avenue, from E to G street.....                            | 1, 350 | 50     |        |         | 1895   |                 |
| Virginia avenue, from G to Rock Creek.....                          | 2, 000 | 8, 724 |        |         | 1896   |                 |
| Vermont avenue, from H to I street.....                             | 400    | 50     | 4, 156 | 10, 153 | 1872   | D <sub>o.</sub> |
| Vermont avenue, from K to M street.....                             | 1, 150 | 50     | 6, 340 |         | 1880   |                 |
| Vermont avenue, from M to P street.....                             | 1, 100 | 50     | 6, 150 |         | 1872   | D <sub>o.</sub> |
| Vermont avenue, from P to R street.....                             | 980    | 50     | 6, 103 |         | 1873   | D <sub>o.</sub> |
| Vermont avenue, from R to T street.....                             | 800    | 50     |        | 4, 853  | 1881   |                 |
| Vermont avenue, from T street to Florida avenue.....                | 1, 100 | 50     |        |         | 6, 424 |                 |

**SOUTHWEST.**

[illegible]

TABLE H.—Statement of character and extent of street pavements July 1, 1893—Continued.

## SOUTHWEST—Continued.

| Locality.                                                         | Carriageway.   |        |          |                         |                    |                       |          |                |                        |             | Resurfaced; originally paved with— |
|-------------------------------------------------------------------|----------------|--------|----------|-------------------------|--------------------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                                   | Length.        | Width. | Asphalt. | Coal tar and con-crete. | Granite.           | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| Four-and-a-half street, from H to P.....                          | Feet.<br>3,070 | 55     |          |                         | Sq. yds.<br>14,566 | Sq. yds.<br>6,333     |          |                | Sq. yds.<br>1889       | 1889        |                                    |
| Union street, from Four-and-a-half to Sixth, between M and O..... | 1,230          | 40     |          |                         |                    |                       |          |                |                        |             |                                    |
| Sixth street, from center of Mall to C street.....                | 1,250          | 66     |          |                         |                    | 5,667                 |          |                |                        |             |                                    |
| Sixth street, from C to river.....                                | 4,530          | 40     |          |                         | 18,700             |                       |          |                |                        | 1873        |                                    |
| Sixth street, from C to river.....                                | 500            | 28     |          |                         |                    |                       |          | 1,477          |                        | 1898        |                                    |
| Sixth street, from Sixth to Seventh, between D and E.....         | 5,200          | 51     |          |                         | 19,839             |                       |          |                |                        | 1877        |                                    |
| Seventh street, from center of Mall to Water street.....          | 400            | 35     | 1,434    |                         |                    |                       |          |                |                        | 1890        |                                    |
| Eighth street, from B to C.....                                   | 35             | 35     | 2,035    |                         |                    |                       |          |                |                        | 1893        |                                    |
| Eighth street, from C to E.....                                   | 910            | 35     | 3,574    |                         |                    |                       |          |                |                        | 1895        |                                    |
| Eighth street, from E to H.....                                   | 1,047          | 35     |          |                         |                    |                       |          |                | 2,332                  | 1889        |                                    |
| Eighth street, from H to Water.....                               | 683            | 35     |          |                         |                    |                       |          |                |                        |             |                                    |
| Ninth street, from B to C.....                                    | 410            | 32     | 1,458    |                         |                    | 900                   |          |                |                        | 1883        |                                    |
| Ninth street, from C to D.....                                    | 250            | 32     |          |                         | 7,061              |                       |          |                |                        | 1886        |                                    |
| Ninth street, from D to Water.....                                | 2,100          | 32     | 361      |                         |                    |                       |          | 2,411          |                        | 1873        |                                    |
| Tenth street, from B to Maryland avenue.....                      | 1,500          | 32     |          |                         | 5,500              |                       |          |                |                        | 1872        |                                    |
| Tenth street, from Maryland avenue to river.....                  | 2,100          | 40     |          |                         | 8,504              |                       |          |                |                        | 1873        |                                    |
| Eleventh street, from B to river.....                             | 1,870          | 40     |          |                         | 3,735              |                       |          |                |                        | 1876        |                                    |
| Twelfth street, from B to river.....                              | 1,760          | 40     |          |                         |                    |                       |          |                |                        | 1891        |                                    |
| Twelfth street, from center of Mall to B street.....              | 1,180          | 40     | 5,705    |                         |                    |                       |          |                | 2,068                  |             |                                    |
| Thirteenth street, from B to Maryland avenue.....                 | 1,470          | 40     |          |                         |                    |                       |          |                |                        |             |                                    |
| Thirteenth street, from Maryland avenue to Water street.....      | 870            | 32     |          |                         |                    |                       |          | 3,016          |                        | 1895        |                                    |
| Thirteen-and-a-half street, from B to D.....                      | 380            | 32     |          |                         |                    | 1,275                 |          |                | 900                    | 1875        |                                    |
| Thirteen-and-a-half street, from D to Maryland avenue.....        | 250            | 32     |          |                         |                    |                       |          |                |                        |             |                                    |
| Thirteen-and-a-half street, from Maryland avenue to river.....    | 600            | 40     |          |                         |                    |                       |          |                |                        | 1893        |                                    |
| Fourteenth street, from center of Mall to B street.....           | 1,420          | 40     |          |                         | 3,920              |                       |          |                |                        |             |                                    |
| Fourteenth street, from B to Maryland avenue.....                 | 1,020          | 32     |          |                         | 6,574              |                       |          |                | 2,625                  | 1873        |                                    |
| Fifteenth street, from B to river.....                            | 1,340          | 35     |          |                         | 4,486              |                       |          |                |                        | 1884        |                                    |
| B street, from South Capitol to First.....                        | 1,340          | 35     |          |                         | 5,305              |                       |          |                |                        | 1879        |                                    |
| B street, from First to Maryland avenue.....                      | 1,340          | 35     |          |                         |                    |                       |          |                |                        |             |                                    |
| B street, from Sixth to Fourteenth.....                           | 3,280          | 32     | 12,840   |                         |                    |                       |          |                |                        |             |                                    |







|                                                                       | 50     | 1, 623 |         | Coal tax.    |
|-----------------------------------------------------------------------|--------|--------|---------|--------------|
| South Capitol street, from M to N.....                                | 800    |        |         |              |
| South Capitol street, from N to river.....                            | 2, 200 |        |         |              |
| Half street, from Virginia avenue to river.....                       | 3, 400 |        |         | 1879<br>1896 |
| First street, from East Capitol to B.....                             | 760    | 4, 412 |         | 1873         |
| First street, from B to C.....                                        | 500    |        | 2, 152  | 1880         |
| First street, from C to D.....                                        | 400    |        |         | 1889         |
| First street, from D to E.....                                        | 576    | 2, 001 | 1, 200  | 1895         |
| First street, from E to river.....                                    | 3, 000 |        | 10, 341 |              |
| Heckman street, from First to Second, S. of E.....                    | 640    |        | 2, 100  |              |
| Second street, from East Capitol to Pennsylvania avenue.....          | 700    | 2, 311 |         | 1881         |
| Second street, from Pennsylvania avenue to D.....                     | 1, 200 |        |         |              |
| Second street, from D to Virginia avenue.....                         | 900    |        | 2, 888  | 1882         |
| Second street, from Virginia avenue to I.....                         | 450    |        | 1, 216  |              |
| Second street, from I to river.....                                   | 1, 500 |        |         | 1892         |
| Third street, from East Capitol to Pennsylvania avenue.....           | 910    | 3, 521 |         |              |
| Third street, from Pennsylvania avenue to C.....                      | 310    |        | 987     | 1884         |
| Third street, from C to D.....                                        | 620    |        | 2, 572  | 1887         |
| Third street, from D to Virginia avenue.....                          | 1, 440 |        | 5, 030  | 1892         |
| Third street, from Virginia avenue to K.....                          | 650    |        | 2, 464  | 1896         |
| Third street, from K to L.....                                        | 270    |        | 800     | 1890         |
| Third street, from L to Georgia avenue.....                           | 1, 250 |        |         |              |
| Fourth street, from East Capitol to Pennsylvania avenue.....          | 1, 100 | 3, 764 | 4, 461  | 1877         |
| Fourth street, from Pennsylvania avenue to North Carolina avenue..... | 200    |        |         | 1883         |
| Fourth street, from North Carolina avenue to river.....               | 4, 030 |        | 593     | 1890         |
| Fifth street, from East Capitol to Pennsylvania avenue.....           | 1, 140 | 4, 916 | 6, 633  | 1889         |
| Fifth street, from intersection of C.....                             |        |        |         | 1882         |
| Fifth street, from Pennsylvania avenue to E.....                      | 750    | 2, 570 | 693     | 1890         |
| Fifth street, from E to river.....                                    | 3, 000 |        |         | 1894         |
| Sixth street, from East Capitol to Pennsylvania avenue.....           | 1, 390 |        | 10, 565 |              |
| Sixth street, from Pennsylvania avenue to E.....                      | 730    |        | 5, 949  | 1886         |
| Sixth street, from E to Virginia avenue.....                          | 1, 330 |        | 4, 399  | 1887         |
| Sixth street, from Virginia avenue to K.....                          | 300    |        | 4, 775  | 1889         |
| Sixth street, from East Capitol to Pennsylvania avenue.....           | 1, 730 |        | 926     |              |
| Seventh street, from D to Virginia avenue.....                        | 2, 100 |        | 7, 223  | 1887         |
| Seventh street, from Virginia avenue to M.....                        | 600    |        | 8, 394  | 1889         |
| Eighth street, from East Capitol to B.....                            | 475    | 2, 403 | 2, 200  | 1890         |
| Eighth street, from B to D.....                                       | 1, 045 | 4, 765 |         | 1895         |
| Eighth street, from D to K.....                                       | 2, 200 | 9, 182 |         | 1894         |
| Eighth street, from K to M.....                                       | 720    | 2, 929 |         | 1884         |
| Ninth street, from I to Capitol to I.....                             | 3, 500 |        |         | 1883         |
| Ninth street, from I to Eastern Branch.....                           | 2, 400 |        | 10, 176 | 1890         |
| Tenth street, from East Capitol to D.....                             | 1, 800 |        | 8, 366  |              |
| Tenth street, from D to Pennsylvania avenue.....                      | 200    |        | 6, 000  | 1890         |
| Tenth street, from Pennsylvania avenue to L.....                      | 1, 240 |        | 788     | 1891         |
| Tenth street, from L to Eastern Branch.....                           | 4, 000 |        | 4, 778  | 1896         |
| Eleventh street, from East Capitol to C.....                          | 1, 450 |        | 8, 022  |              |
|                                                                       |        |        | 8, 076  | 1891         |

c Resurfaced on asphalt block.

d Two roadways, 40 feet each.

e Permit work.

**Resurfaced on asphalt block.**

b Two roadways, 40 feet each.

**Permit work.**

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.  
SOUTHEAST—Continued.

| Locality.                                                                    | Carriageway. |        |                 |                        |                 |                       |                 |                 |                        |             | Resurfaced; originally paved with— |
|------------------------------------------------------------------------------|--------------|--------|-----------------|------------------------|-----------------|-----------------------|-----------------|-----------------|------------------------|-------------|------------------------------------|
|                                                                              | Length.      | Width. | Asphalt.        | Coal tar and concrete. | Granite.        | Cobble and blue rock. | Macadam.        | Asphalt block.  | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
|                                                                              | <i>Feet.</i> |        | <i>Sq. yds.</i> | <i>Sq. yds.</i>        | <i>Sq. yds.</i> | <i>Sq. yds.</i>       | <i>Sq. yds.</i> | <i>Sq. yds.</i> | <i>Sq. yds.</i>        |             |                                    |
| Eleventh street, from C to Pennsylvania avenue.....                          | 1,298        | 48     | .....           | .....                  | .....           | .....                 | .....           | .....           | .....                  | 1893        | .....                              |
| Eleventh street, from Pennsylvania avenue to bridge.....                     | 3,900        | 40     | .....           | .....                  | 15,451          | .....                 | .....           | .....           | .....                  | 1889        | .....                              |
| Eleventh street, from M to river (west side).....                            | 1,700        | 56     | .....           | .....                  | 4,367           | .....                 | .....           | .....           | .....                  | 1882        | .....                              |
| Twelfth street, from Lincoln Square to river.....                            | 4,400        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 17,956                 | .....       | .....                              |
| Thirteenth street, from East Capitol to river.....                           | 2,050        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 8,000                  | .....       | .....                              |
| Thirteenth street, from D to Pennsylvania avenue.....                        | 800          | 35     | .....           | .....                  | .....           | .....                 | 3,592           | .....           | .....                  | .....       | .....                              |
| Thirteenth street, from Pennsylvania avenue to river.....                    | 2,450        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 9,538                  | .....       | .....                              |
| Thirteenth street, from East Capitol to river.....                           | 4,700        | 45     | .....           | .....                  | .....           | .....                 | .....           | .....           | 23,500                 | .....       | .....                              |
| Fifteenth street, from East Capitol to river.....                            | 4,500        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 17,500                 | .....       | .....                              |
| Sixteenth street, from East Capitol to Kentucky avenue.....                  | 3,300        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 12,533                 | .....       | .....                              |
| Sixteenth street, from East Capitol to river.....                            | 3,300        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 12,533                 | .....       | .....                              |
| Seventeenth street, from East Capitol to river.....                          | 2,300        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 8,107                  | .....       | .....                              |
| Eighteenth street, from East Capitol to Congressional Cemetery.....          | 2,300        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | .....                  | .....       | .....                              |
| Nineteenth street, from East Capitol to Congressional Cemetery.....          | 700          | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | .....                  | .....       | .....                              |
| Twentieth street, from East Capitol to B.....                                | 700          | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 2,560                  | .....       | .....                              |
| Twenty-first street, from East Capitol to B.....                             | 700          | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 2,560                  | .....       | .....                              |
| Twenty-second street, from East Capitol to B.....                            | 700          | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 2,560                  | .....       | .....                              |
| Twenty-third street, from East Capitol to B.....                             | 700          | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 2,560                  | .....       | .....                              |
| East Capitol street, from First (south half) to Fourth.....                  | 1,500        | 50     | 2,736           | .....                  | .....           | .....                 | .....           | .....           | .....                  | 1879        | .....                              |
| East Capitol street, from Fourth to Ninth (south half).....                  | 1,900        | 50     | 3,417           | .....                  | .....           | .....                 | .....           | .....           | .....                  | 1879        | .....                              |
| East Capitol street, from Ninth to Eleventh (south half).....                | 600          | 50     | 1,786           | .....                  | .....           | .....                 | .....           | .....           | .....                  | 1883        | .....                              |
| East Capitol street, from Lincoln Square to Eastern Branch (south half)..... | 4,280        | 50     | .....           | .....                  | .....           | .....                 | .....           | .....           | 12,941                 | .....       | .....                              |
| A street, from Second to Third.....                                          | 350          | 42     | 1,724           | .....                  | .....           | .....                 | .....           | .....           | .....                  | 1881        | .....                              |
| A street, from Third to Sixth.....                                           | 950          | 35     | .....           | .....                  | .....           | .....                 | .....           | 3,317           | .....                  | 1886        | .....                              |
| A street, from Sixth to Seventh.....                                         | 600          | 35     | .....           | .....                  | .....           | .....                 | .....           | 2,891           | .....                  | 1887        | .....                              |
| A street, from Seventh to Ninth.....                                         | 800          | 35     | .....           | .....                  | .....           | .....                 | .....           | 3,043           | .....                  | 1894        | .....                              |
| A street, from Massachusetts avenue to Eastern Branch.....                   | 4,000        | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | .....                  | .....       | .....                              |
| A street (south side) to Lincoln Square.....                                 | 850          | 35     | .....           | .....                  | .....           | .....                 | .....           | .....           | 15,600                 | .....       | .....                              |
| B street, from South Capitol to New Jersey avenue.....                       | 300          | 40     | .....           | .....                  | 870             | .....                 | 4,398           | .....           | .....                  | .....       | .....                              |

Asphalt.  
Do.

Coal tax.

|                                                                 | 1,300 | 45-35 | 8,942 | 605   | 1873   | 1891 |
|-----------------------------------------------------------------|-------|-------|-------|-------|--------|------|
| B street, from New Jersey avenue to Second street. <sup>a</sup> | 1,300 | 45-35 | 8,942 |       |        |      |
| B street, from Second to Fifth.                                 | 970   | 35    | 3,810 |       |        |      |
| B street, from Fifth street to North Carolina avenue            | 870   | 35    |       | 3,154 |        |      |
| B street, from North Carolina avenue to Eleventh street.        | 1,000 | 35    |       |       | 4,577  |      |
| B street, from Eleventh to Nineteenth.                          | 4,300 | 35    |       |       | 10,455 |      |
| B street, from Nineteenth street to Eastern Branch              | 1,400 | 35    |       |       | 4,622  |      |
| Carroll street, between B and C, First and Second.              | 560   | 24    | 1,416 |       |        |      |
| C street, from South Capitol to New Jersey avenue.              | 280   | 32    | 948   |       |        |      |
| C street, from New Jersey avenue to Fourth street.              | 1,960 | 32    |       |       | 6,922  |      |
| C street, from Fourth to Sixth.                                 | 400   | 32    |       |       | 1,464  |      |
| C street, from Sixth to Seventh.                                | 600   | 32    |       |       | 2,142  |      |
| C street, from Seventh to Eleventh.                             | 1,200 | 32    |       |       | 1,614  |      |
| C street, from Eleventh to Nineteenth.                          | 4,300 | 32    | 1,178 |       | 10,222 |      |
| D street, from South Capitol to First.                          | 800   | 35    | 3,274 |       |        |      |
| D street, from First to Third.                                  | 1,000 | 35    |       |       | 4,394  |      |
| D street, from Third to Sixth.                                  | 900   | 35    |       |       | 3,860  |      |
| D street, from Sixth to Pennsylvania avenue.                    | 580   | 34    |       |       | 1,798  |      |
| D street, from Pennsylvania avenue to Nineteenth street.        | 1,000 | 35    |       |       | 3,209  |      |
| D street, from Nineteenth street to Second.                     | 4,550 | 35    |       |       | 17,810 |      |
| D street, from Second to South side Third.                      | 370   | 35    | 1,464 |       |        |      |
| D street, from D and E to New Jersey avenue and South Capitol.  | 530   | 34    |       |       | 2,131  |      |
| E street, from Third to Pennsylvania avenue.                    | 1,600 | 45    |       |       |        |      |
| E street, from Pennsylvania avenue to Thirteenth street.        | 2,950 | 35    |       |       | 7,819  |      |
| E street, from Thirteenth to Nineteenth.                        | 3,200 | 40    | 4,511 |       |        |      |
| G street, from Third to Eleventh.                               | 2,950 | 36    | 5,720 |       |        |      |
| G street, from Eleventh to Pennsylvania avenue.                 | 2,850 | 36    |       | 7,627 |        |      |
| G street, from Pennsylvania avenue to Seventeenth street.       | 1,875 | 36    |       |       | 7,627  |      |
| I street, from South Capitol to Second.                         | 1,000 | 35    |       |       | 2,387  |      |
| I street, from Second to Third.                                 | 400   | 35    |       |       | 2,737  |      |
| I street, from Third to Eighth.                                 | 1,400 | 35    |       |       | 4,000  |      |
| I street, from Eighth to Georgia avenue.                        | 1,800 | 35    |       |       |        |      |
| K street, from South Capitol to Eastern Branch.                 | 7,600 | 35    | 3,645 |       |        |      |
| L street, from South Capitol to Eastern Branch.                 | 7,600 | 35    |       |       | 1,220  |      |
| Van street, between New Jersey avenue and First, M and N.       | 550   | 25    |       |       | 5,563  |      |
| M street, from South Capitol to Fourth.                         | 2,400 | 35    |       |       | 3,355  |      |
| M street, from Fourth to Eastern Branch.                        | 4,600 |       |       |       | 27,223 |      |
| Quander street, between M and N, New Jersey avenue and First.   | 440   | 25    | 8,944 |       | 27,533 |      |
| N street, from South Capitol to Third.                          | 2,080 | 85    |       |       | 1,445  |      |
| N street, from Third to Twelfth.                                | 1,600 | 35    |       |       | 6,327  |      |
| O street, from South Capitol to Eastern Branch.                 | 800   | 35    |       |       | 1,555  |      |
| Waller street, between B and C, Twelfth and Thirteenth.         | 510   | 30    | 4,087 |       |        |      |

<sup>a</sup> Widened, First to Second streets.

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.

## SOUTHEAST—Continued.

| Locality.                                                         | Carriageway. |       |          |          |          |          |          |          |          |          | Year resurfaced. | Year paved. | Gravel and unimproved. | Asphalt block. | Macadam. | Cobble and blue rock. | Granite. | Coal tar and concrete. | Asphalt. | Width. | Length. |
|-------------------------------------------------------------------|--------------|-------|----------|----------|----------|----------|----------|----------|----------|----------|------------------|-------------|------------------------|----------------|----------|-----------------------|----------|------------------------|----------|--------|---------|
|                                                                   | Feet.        | Feet. | Sq. yds. | Sq. yds. | Sq. yds. | Sq. yds. | Sq. yds. | Sq. yds. | Sq. yds. | Sq. yds. |                  |             |                        |                |          |                       |          |                        |          |        |         |
| Georgia avenue, from South Capitol to Nineteenth Branch.          | 7,500        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Kentucky avenue, from Lincoln Square to Eastern Branch.           | 4,350        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Massachusetts avenue, from Thirteenth to Nineteenth               | 3,600        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| New Jersey avenue, from B to E street.                            | 1,600        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| New Jersey avenue, from section of B street.                      | 1,600        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| New Jersey avenue, from Canal to M street.                        | 1,400        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| New Jersey avenue, from M to N street.                            | 600          | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| New Jersey avenue, from First to Third street.                    | 900          | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| North Carolina avenue, from Third to Sixth street.                | 1,240        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| North Carolina avenue, from Sixth to Eighth street.               | 1,150        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| North Carolina avenue, from Eighth to Eleventh street.            | 1,150        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Pennsylvania avenue, intersection of Second street.               | 1,900        | (a)   | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Pennsylvania avenue, from Second to Fourth street.                | 3,600        | (a)   | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Pennsylvania avenue, from Fourth to Eighth street.                | 1,400        | (a)   | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Pennsylvania avenue, from Eighth to Eleventh street.              | 1,100        | (a)   | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Pennsylvania avenue, from Eleventh to Bridge street.              | 1,000        | (a)   | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Pennsylvania avenue, from Bridge to Sixth street.                 | 6,800        | (a)   | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| South Carolina avenue, from Second to Sixth street.               | 1,500        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| South Carolina avenue, from Sixth to Seventh street.              | 700          | 29    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| South Carolina avenue, from Seventh to Ninth street.              | 3,200        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| South Carolina avenue, from Ninth street to Massachusetts avenue. | 300          | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Virginia avenue, from Second to Third street.                     | 3,010        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Virginia avenue, from Third to Eleventh street.                   | 1,800        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |
| Virginia avenue, from Eleventh street to Eastern Branch.          | 1,800        | 50    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....    | .....            | .....       | .....                  | .....          | .....    | .....                 | .....    | .....                  | .....    | .....  | .....   |

Coal tar.

Asphalt (south side).

Asphalt (north side).









TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.  
NORTHEAST—Continued.

| Locality.                                                     | Carriageway. |        |          |                        |          |                       |          |                |                        |             | Resurfaced; originally paved with— |                  |
|---------------------------------------------------------------|--------------|--------|----------|------------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|------------------|
|                                                               | Length.      | Width. | Asphalt. | Coal tar and concrete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. |                                    | Year resurfaced. |
|                                                               | Feet.        | Feet.  | Sq. yds. | Sq. yds.               | Sq. yds. | Sq. yds.              | Sq. yds. | Sq. yds.       | Sq. yds.               | Sq. yds.    |                                    |                  |
| C street, from Tenth to Eastern Branch .....                  | 5,500        | 32     |          |                        |          |                       |          |                |                        | 19,195      |                                    |                  |
| D street, from North Capitol to Delaware avenue.....          | 340          | 32     |          |                        |          |                       |          |                |                        | 1,920       |                                    |                  |
| D street, from Delaware avenue to Massachusetts street.....   | 1,200        | 32     | 4,117    |                        |          |                       |          |                |                        |             | 1893                               |                  |
| D street, from Massachusetts avenue to Maryland avenue.....   | 1,450        | 32     |          |                        |          |                       | 5,446    |                |                        |             | 1889                               |                  |
| D street, from Maryland avenue to Fifteenth.....              | 3,500        | 35     | 1,641    |                        |          |                       |          |                |                        | 12,000      | 1897                               |                  |
| E street, from North Capitol to First .....                   | 800          | 35     |          |                        | 2,913    |                       |          |                |                        |             | 1893                               |                  |
| E street, from First to Fourth .....                          | 1,420        | 30     |          |                        |          |                       |          |                | 5,640                  |             | 1893                               |                  |
| E street, from Fourth to Fifteenth.....                       | 4,862        | 35     |          |                        |          |                       |          |                |                        | 15,439      | 1891                               |                  |
| California street, between E and F, First and Second .....    | 640          | 24     | 21,635   |                        |          |                       |          |                |                        |             | 1888                               |                  |
| F street, from North Capitol to Third .....                   | 2,000        | 35     | 8,335    |                        |          |                       |          |                |                        | 10,800      |                                    |                  |
| F street, from Third to Fifteenth.....                        | 5,100        | 35     | 8,087    |                        |          |                       |          |                |                        | 2,285       |                                    |                  |
| F street, from North Capitol to Second.....                   | 576          | 30     |          |                        |          |                       |          |                |                        | 2,000       | 1890                               |                  |
| Chicago street, between F and G, First and Second.....        | 609          | 30     |          |                        |          |                       |          |                |                        |             |                                    |                  |
| Morris street, between F and G, Sixth and Seventh.....        | 860          | 35     | 2,994    |                        |          |                       |          |                |                        | 6,151       | 1891                               |                  |
| G street, from North Capitol to First .....                   | 1,800        | 35     |          |                        |          |                       | 2,350    |                |                        |             | 1891                               |                  |
| G street, from First to Sixth.....                            | 561          | 35     |          |                        |          |                       |          |                |                        | 13,000      | 1897                               |                  |
| G street, from Sixth to Seventh.....                          | 3,500        | 35     | 552      |                        |          |                       |          |                |                        |             |                                    |                  |
| G street, from Seventh to Fifteenth.....                      | 750          | 20     |          |                        |          | 1,738                 |          |                |                        |             |                                    |                  |
| Jackson street, between G and H, North Capitol and First..... |              |        |          |                        |          |                       |          |                |                        |             |                                    |                  |
| James street, between G and H, Twelfth and Thirteenth.....    | 450          | 30     |          |                        |          |                       |          |                |                        | 1,151       | 1883                               | 1891             |
| H street, from North Capitol to First.....                    | 850          | 56     | 4,190    |                        |          |                       |          |                |                        |             | 1893                               | 1893             |
| H street, from First to Fifteenth.....                        | 6,320        | 56     | 14,124   |                        |          |                       |          |                |                        |             | 1890                               | 1893             |
| Do.....                                                       |              |        | 13,662   |                        |          |                       |          |                |                        |             |                                    |                  |
| Wythe street, between H and I, Twelfth and Thirteenth.....    | 450          | 24     |          |                        |          |                       |          |                |                        | 1,300       | 1889                               |                  |
| I street, from North Capitol to First.....                    | 840          | 35     | 3,295    |                        |          |                       |          |                |                        | 7,531       | 1889                               |                  |
| I street, from First to Sixth.....                            | 1,780        | 35     |          |                        |          |                       |          |                |                        |             | 1889                               |                  |
| I street, from Sixth to Seventh.....                          | 561          | 35     |          |                        |          |                       | 1,779    |                |                        |             |                                    |                  |
| I street, from Seventh to Florida avenue.....                 | 2,587        | 35     |          |                        |          |                       |          |                |                        | 8,058       | 1889                               |                  |
| I street, between North Capitol and First, I and K.....       | 850          | 20     | 1,426    |                        |          |                       |          |                |                        |             |                                    |                  |

Asphalt.  
Asphalt (north side).  
Asphalt (south side).

|                                                               | 850   | 50 | 4,498 |        |        |  |  |        | 1889 |
|---------------------------------------------------------------|-------|----|-------|--------|--------|--|--|--------|------|
| K street, from North Capitol to First.                        | 850   | 50 | 4,498 |        |        |  |  |        |      |
| K street, from First to Florida avenue.                       | 4,300 | 50 |       |        |        |  |  |        |      |
| Fenton street, between North Capitol and First, K and L.      | 850   | 24 |       |        |        |  |  | 21,436 |      |
| Callan street, between K and L, Sixth and Seventh.            | 561   |    |       |        |        |  |  | 1,267  |      |
| L street, from North Capitol to Florida avenue.               | 4,500 | 35 |       |        |        |  |  | 17,500 |      |
| Forayth street, between North Capitol and First, Land M.      | 850   | 25 |       |        |        |  |  | 2,220  |      |
| Babcock street, between L and M, North Capitol and First.     | 850   | 25 |       |        |        |  |  | 2,220  |      |
| Riley street, between L and M, North Capitol and First.       | 850   | 25 |       |        |        |  |  | 2,220  |      |
| M street, from North Capitol to Second.                       | 1,468 | 32 | 5,486 |        |        |  |  |        | 1894 |
| M street, from Second to Florida avenue.                      | 1,730 | 32 | 7,183 |        |        |  |  |        | 1896 |
| Patterson street, between M and N, North Capitol and Second.  | 1,480 | 25 |       |        |        |  |  | 6,045  |      |
| Morton place, between Sixth and Seventh streets, M and L.     | 650   | 25 |       |        |        |  |  | 1,800  |      |
| N street, from North Capitol to Florida avenue.               | 2,270 | 35 |       |        |        |  |  | 7,300  |      |
| Decatur street, between P and O, North Capitol and First.     | 747   | 25 |       |        |        |  |  | 1,245  |      |
| Oleams street, between L and M, Sixth and Seventh.            | 650   | 30 |       |        |        |  |  | 1,800  |      |
| P street, from North Capitol to Florida avenue.               | 1,250 | 35 |       |        |        |  |  | 4,622  |      |
| P street, from North Capitol to Florida avenue.               | 700   | 32 | 2,539 |        |        |  |  |        | 1896 |
| Delaure avenue, from C to C street.                           | 590   | 50 |       | 2,056  |        |  |  |        | 1879 |
| Delaure avenue, from C street to Florida avenue.              | 5,300 | 50 |       |        |        |  |  | 27,112 |      |
| Florida avenue, from North Capitol to New York avenue.        | 1,300 | 46 |       |        |        |  |  | 6,614  |      |
| Florida avenue, from New York avenue to Brentwood road.       | 700   |    |       | 3,040  |        |  |  |        | 1895 |
| Florida avenue, from Brentwood road to Ninth street.          | 3,140 | 48 |       | 15,107 |        |  |  |        | 1898 |
| Maryland avenue, from Ninth to Fifteenth street.              | 3,060 | 46 |       | 17,005 |        |  |  |        | 1892 |
| Maryland avenue, from First to Fourth street.                 | 1,650 | 60 |       |        | 11,535 |  |  |        | 1887 |
| Maryland avenue, from Sixth to Eleventh street.               | 2,170 | 60 |       |        | 14,951 |  |  |        | 1880 |
| Maryland avenue, from Eleventh to Thirteenth street.          | 1,070 | 60 |       |        | 8,269  |  |  |        | 1890 |
| Maryland avenue, from Thirteenth to Fifteenth street.         | 1,040 | 60 |       |        | 9,635  |  |  |        | 1891 |
| Maryland avenue, from intersection of Fifteenth street.       | 1,280 | 60 |       | 2,527  |        |  |  |        | 1889 |
| Massachusetts avenue, from North Capitol to First street.     | 950   | 50 | 4,069 |        |        |  |  |        | 1892 |
| Massachusetts avenue, from First to Second street.            | 720   | 51 |       |        | 3,961  |  |  |        | 1893 |
| Massachusetts avenue, from Second to Fourth street.           | 900   | 50 | 6,001 |        |        |  |  |        | 1895 |
| Massachusetts avenue, from Sixth to Eighth street.            | 1,060 | 50 |       |        | 6,749  |  |  |        |      |
| Massachusetts avenue, from Eighth to Eleventh street.         | 980   | 50 |       |        | 6,398  |  |  |        | 1895 |
| New York avenue, from North Capitol street to Florida avenue. | 1,370 | 50 | 5,393 |        |        |  |  |        | 1891 |
| North Carolina avenue, from Lincoln Square to C street.       | 2,060 | 50 |       |        |        |  |  | 11,110 |      |
| Tennessee avenue, from Lincoln Square to Fifteenth street.    | 2,090 | 50 |       |        |        |  |  | 11,600 |      |

a Permit work.

b Second to Seventh street.

TABLE II.—Statement of character and extent of street pavements July 1, 1898—Continued.  
GEORGETOWN.

| Locality.                                                                    | Carriageway.   |        |          |                         |          |                       |          |                |                        |             | Resurfaced: originally paved with— |
|------------------------------------------------------------------------------|----------------|--------|----------|-------------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                                              | Length.        | Width. | Asphalt. | Coal tar and con-crete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| Water street, from Rock Creek to Aqueduct.....                               | Feet.<br>3,600 | 50     |          |                         | 18,021   |                       |          |                |                        | 1875        |                                    |
| South Water street, between Water and M, Thirty-first and Thirty-second..... | 420            |        |          |                         |          |                       |          |                |                        |             |                                    |
| Grace street, from M to M and M, Twenty-second.....                          | 670            | 20     |          |                         |          |                       |          |                |                        | 1873        |                                    |
| M street, from Twenty-eighth to Thirty-first.....                            | 1,700          | 60     |          | 7,887                   |          | 1,228                 |          |                |                        | 1875        | 1888                               |
| M street, from Thirty-first to Thirty-sixth.....                             | 2,300          | 50     | 15,130   |                         |          |                       |          |                |                        | 1875        | 1898-8                             |
| M street, from Thirty-seventh to Thirty-eighth.....                          | 300            | 50     |          |                         |          | 1,720                 |          |                |                        | 1876        |                                    |
| Olive street, from Rock Creek to Twenty-eighth street.....                   | 500            | 44     |          |                         |          |                       |          | 1,566          |                        | 1872        |                                    |
| Olive street, from Twenty-eighth to Thirty-first.....                        | 480            | 30     |          |                         |          | 1,946                 |          |                |                        | 1891        |                                    |
| Prospect street, from Thirty-second to Thirty-third.....                     | 820            | 30     | 2,789    |                         |          |                       |          |                |                        | 1890        |                                    |
| Prospect street, from Thirty-third to Thirty-fifth.....                      | 850            | 30     | 2,918    |                         |          |                       |          |                |                        | 1891        |                                    |
| Prospect street, from Thirty-fifth to Thirty-sixth.....                      | 370            | 30     | 966      |                         |          |                       |          | 2,089          |                        |             |                                    |
| Prospect street, from Thirty-sixth to Thirty-eighth.....                     | 370            | 30     |          |                         |          |                       |          | 870            |                        |             |                                    |
| N street, from Rock Creek to Thirty-seventh street.....                      | 320            | 30     |          |                         |          | 959                   |          |                |                        | 1874        |                                    |
| N street, from Thirty-seventh to Thirty-eighth.....                          | 320            | 30     |          |                         |          |                       |          |                |                        | 1882        |                                    |
| N street, from Twenty-eighth to Thirtieth.....                               | 540            | 30     | 1,604    |                         |          |                       |          |                |                        | 1896        |                                    |
| N street, from Thirtieth to Thirty-second.....                               | 1,100          | 30     | 3,525    |                         |          |                       |          |                |                        | 1880        |                                    |
| N street, from Thirty-second to Thirty-fifth.....                            | 1,640          | 30     | 5,889    |                         |          |                       |          |                |                        | 1880        |                                    |
| N street, from Thirty-fifth to Thirty-sixth.....                             | 430            | 30     | 1,081    |                         |          |                       |          |                |                        | 1891        |                                    |
| N street, from Thirty-sixth to Thirty-eighth.....                            | 650            | 30     |          |                         |          |                       |          |                |                        |             |                                    |
| O street, from Rock Creek to Twenty-eighth street.....                       | 980            | 30     |          |                         |          |                       |          | 2,089          |                        |             |                                    |
| O street, from Twenty-eighth to Twenty-ninth.....                            | 300            | 30     | 860      |                         |          |                       |          | 2,847          |                        | 1890        |                                    |
| O street, from Twenty-ninth to Thirty-second.....                            | 1,590          | 30     | 4,829    |                         |          |                       |          |                |                        | 1885        |                                    |
| O street, from Thirty-second to Thirty-fifth.....                            | 1,500          | 30     |          | 4,435                   |          |                       |          |                |                        | 1879        |                                    |
| O street, from Thirty-fifth to college gate.....                             | 730            | 30     | 2,398    |                         |          |                       |          |                |                        |             |                                    |
| Dumbarton avenue, from Rock Creek to Twenty-seventh street.....              | 450            | 30     |          |                         |          | 1,250                 |          |                |                        |             | 1888                               |
| Dumbarton avenue, from Twenty-seventh to Twenty-eighth street.....           | 375            | 30     |          |                         |          |                       |          |                |                        |             |                                    |
| Dumbarton avenue, from Twenty-eighth to Thirty-second street.....            | 1,760          | 30     | 3,609    |                         |          |                       |          |                |                        | 1887        |                                    |

|                                                                         | 340   | 40 | 1,590 |       | 4,500 |       | 1879 |
|-------------------------------------------------------------------------|-------|----|-------|-------|-------|-------|------|
| P street, from 340 feet west of bridge                                  | 340   | 40 | 1,590 |       | 4,500 |       | 1879 |
| P street, from Rock Creek to Twenty-eighth street                       | 2,900 | 40 |       |       | 5,000 |       | 1878 |
| P street, from Twenty-eighth to Thirty-second                           | 2,900 | 30 |       |       |       |       | 1879 |
| P street, from Thirty-second to Thirty-fifth                            | 1,370 | 30 |       | 3,624 |       |       | 1884 |
| P street, from Thirty-fifth to Thirty-seventh                           | 680   | 30 |       |       |       | 2,084 |      |
| Bank street, between M and Prospect, to Thirty-third and Thirty-fourth. | 250   |    |       |       |       |       |      |
| Aqueduct street, from M street to bridge                                | 330   |    |       | 1,837 |       |       | 1887 |
| M street, from P to North                                               | 600   | 30 |       |       | 1,500 |       |      |
| North street, from P to Mill                                            | 400   | 30 |       |       |       | 1,500 |      |
| Q street, from Twenty-eighth to Thirtieth                               | 550   | 30 | 2,000 |       |       |       | 1880 |
| Q street, from Thirtieth to Valley                                      | 1,200 | 30 |       | 3,943 |       |       | 1887 |
| Q street, from Valley to Thirty-second                                  | 300   | 30 |       | 1,067 |       |       | 1887 |
| Q street, from Thirty-second to Thirty-fifth                            | 1,230 | 30 | 4,002 |       |       |       | 1891 |
| R street, from Thirty-second to Thirty-fifth                            | 1,000 | 30 |       |       |       | 3,365 |      |
| R street, from Thirty-second to Thirty-fifth                            | 750   | 30 |       |       |       | 2,577 |      |
| T street, from Thirty-second to Thirty-fifth                            | 1,750 | 30 |       |       |       | 2,567 |      |
| T street, from Thirty-first to thirty-second                            | 1,720 | 30 | 4,227 |       |       | 6,750 |      |
| U street, from Thirty-second to Thirty-fifth                            | 1,040 | 30 | 1,552 |       |       |       | 1895 |
| U street, from Thirty-second to Thirty-fifth                            | 700   | 30 |       |       |       |       | 1894 |
| Orange place, Irvin place, and Avon place in Cooke Park                 | 1,410 | 25 | 4,008 |       |       |       | 1893 |
| Twenty-seventh street, from M to P                                      | 1,500 | 30 |       |       | 5,047 |       | 1898 |
| Twenty-eighth street, from Rock Creek to M street                       | 1,400 | 30 |       |       |       | 1,000 | 1894 |
| Twenty-eighth street, from M to P                                       | 1,420 | 30 | 4,428 |       |       |       | 1872 |
| Twenty-eighth street, from P to Q                                       | 400   | 30 | 1,474 |       |       |       | 1890 |
| Twenty-eighth street, from Q to U                                       | 690   | 30 |       |       |       | 3,116 |      |
| Twenty-ninth street, from Water to M                                    | 850   | 30 |       |       | 2,919 |       | 1874 |
| Twenty-ninth street, from M to N                                        | 550   | 30 |       | 1,885 |       |       | 1882 |
| Twenty-ninth street, from N to P                                        | 850   | 30 | 2,969 |       |       |       | 1883 |
| Twenty-ninth street, from P to Q                                        | 370   | 30 | 1,261 |       |       |       | 1890 |
| Twenty-ninth street, from Q to U                                        | 700   | 30 |       |       |       | 4,610 |      |
| Thirtieth street, from Water to M                                       | 800   | 30 |       |       |       |       | 1877 |
| Thirtieth street, from M to N                                           | 550   | 30 |       |       | 2,732 |       | 1879 |
| Thirtieth street, from N to P                                           | 840   | 30 | 2,932 | 2,121 |       |       | 1883 |
| Thirtieth street, from P to Q                                           | 370   | 30 | 1,282 |       |       |       | 1883 |
| Thirtieth street, from Q to U                                           | 700   | 30 |       | 2,746 |       |       | 1883 |
| Jefferson street, between Thirtieth and Thirty-first, to Water and M    | 860   | 30 |       |       | 2,839 |       | 1874 |
| Thirty-first street, from K to Canal                                    | 550   | 30 |       |       |       |       | 1887 |
| Thirty-first street, from Canal to M                                    | 340   | 30 |       | 1,208 |       |       | 1880 |
| Thirty-first street, from N to P                                        | 520   | 30 |       |       | 1,742 |       | 1880 |
| Thirty-first street, from P to U                                        | 850   | 30 | 2,937 |       |       |       | 1882 |
| Valley street, between Thirty-first and Thirty-second                   | 940   | 30 | 1,832 | 3,285 |       | 3,849 | 1885 |
| P and U                                                                 | 1,500 |    |       |       |       |       | 1895 |
| Thirty-second street, from Water to M                                   | 1,000 | 30 |       |       | 2,540 |       |      |
| Thirty-second street, from M to P                                       | 1,500 | 30 |       | 5,000 |       |       | 1879 |
| Thirty-second street, from P to U                                       | 1,700 | 30 |       |       |       |       | 1894 |
| Potomac street, from Canal to M                                         | 650   | 30 |       |       | 2,100 |       | 1876 |

a Permit work.

### Permit work.

TABLE H.—Statement of character and extent of street pavements July 1, 1898—Continued.

GEORGETOWN—Continued.

| Locality.                                                          | Carriageway. |        |          |                        |          |                       |          |                |                        |             | Resurfaced; originally paved with— |
|--------------------------------------------------------------------|--------------|--------|----------|------------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                                    | Length.      | Width. | Asphalt. | Coal tar and concrete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| Potomac street, from M to Prospect.....                            | 200          | 30     |          |                        | 664      |                       |          |                |                        | 1879        |                                    |
| Potomac street, from Prospect to O.....                            | 500          | 30     | 1,840    |                        | 664      |                       |          |                |                        | 1884        |                                    |
| Potomac street, from M to Prospect.....                            | 320          | 30     |          |                        | 664      |                       |          |                |                        | 1884        |                                    |
| Thirty-third street, from M to Water.....                          | 500          | 30     |          |                        |          | 1,660                 |          |                |                        | 1880        |                                    |
| Thirty-third street, from M to N.....                              | 550          | 30     | 1,580    |                        |          |                       |          |                |                        | 1883        |                                    |
| Thirty-third street, from N to P.....                              | 620          | 30     | 2,050    |                        |          |                       |          |                |                        | 1880        |                                    |
| Thirty-third street, from P to Thirty-second.....                  | 1,300        | 30     | 4,615    |                        |          |                       |          |                | 1,066                  | 1890        |                                    |
| Thirty-fourth street, from Water to M.....                         | 350          | 30     | 1,665    |                        |          |                       |          |                |                        | 1893        |                                    |
| Thirty-fourth street, from M to N.....                             | 550          | 30     | 2,100    |                        |          |                       |          |                |                        | 1892        |                                    |
| Thirty-fourth street, from N to P.....                             | 600          | 30     | 2,265    |                        |          |                       |          |                |                        | 1891        |                                    |
| Thirty-fourth street, from P to R.....                             | 1,800        | 30     |          |                        |          |                       | 6,570    |                |                        | 1891        |                                    |
| Thirty-fourth street, from R to Thirty-second.....                 | 1,800        | 30     |          |                        |          |                       |          |                | 660                    |             |                                    |
| Thirty-fifth street, from Water to M.....                          | 270          | 30     |          |                        |          | 975                   |          |                |                        | 1890        |                                    |
| Thirty-fifth street, from M to Prospect.....                       | 250          | 35     | 1,017    |                        |          |                       |          |                |                        | 1890        |                                    |
| Thirty-fifth street, from Prospect to N.....                       | 270          | 35     |          | 2,929                  |          |                       |          |                |                        | 1889        |                                    |
| Thirty-fifth street, from N to P.....                              | 700          | 35     |          | 1,558                  |          |                       |          |                |                        | 1887        |                                    |
| Thirty-fifth street, from P to Q.....                              | 350          | 35     |          |                        |          |                       |          |                |                        | 1890        |                                    |
| Thirty-fifth street, from Q to U.....                              | 1,440        | 35     | 5,749    |                        |          |                       |          |                |                        | 1891        |                                    |
| Thirty-fifth street, from U to Tenley road.....                    | 1,400        | 35     | 6,009    |                        |          |                       |          |                | 800                    | 1891        |                                    |
| Thirty-sixth street, from M to Prospect.....                       | 260          | 30     | 2,368    |                        |          |                       |          |                |                        | 1891        |                                    |
| Thirty-sixth street, from Prospect to O.....                       | 670          | 30     |          |                        |          |                       |          |                | 2,200                  |             |                                    |
| Thirty-sixth street, from O to Q.....                              | 650          | 30     |          |                        |          |                       |          |                | 4,167                  |             |                                    |
| Thirty-seventh street, from M to Q.....                            | 1,650        | 30     |          |                        |          |                       |          |                |                        | 1893        |                                    |
| High (Thirty-second) street, from Thirty-fifth to Tenley road..... | 2,121        |        |          |                        | 6,076    |                       |          |                |                        |             |                                    |

## SUBURBAN (NORTHWEST).

|                                                                 | 447<br>625 | 35<br>35 | \$1,898  |     |       |  | 2,575  |       | 1892<br>1891 |
|-----------------------------------------------------------------|------------|----------|----------|-----|-------|--|--------|-------|--------------|
| First street extended, from R to S to T.                        |            |          |          |     |       |  |        |       |              |
| Le Drott avenue, from Florida avenue to Maple.                  | 1,055      | 35       | \$4,419  |     |       |  |        |       | 1892         |
| Le Drott avenue, from Maple to W street.                        | 405        | 35       | \$1,682  |     |       |  |        |       | 1892         |
| Linden street, from Florida avenue northward.                   | 429        | 35       | \$1,571  |     |       |  |        |       | 1891         |
| Linden street, from end of pavement to Maple avenue.            | 147        | 35       | \$1,574  |     |       |  |        |       | 1892         |
| Linden street, from Maple to College.                           | 940        | 30       |          |     |       |  | 7,820  |       | 1891         |
| Larch street, from Florida avenue to Maple.                     | 423        | 32       | \$1,516  |     |       |  |        |       | 1890         |
| Larch street, from Maple avenue to Spruce street.               | 191        | 32       | \$3,734  |     |       |  |        |       | 1891         |
| Maple avenue, from Florida avenue to Linden street.             | 810        | 32       | \$3,227  |     |       |  |        |       | 1890         |
| Maple avenue, from Linden street to Le Drott avenue.            | 986        | 32       | \$3,680  |     |       |  |        |       | 1891         |
| Pomeroy street, from Fifth to Seventh.                          | 754        | 30       | \$2,560  |     |       |  |        |       | 1891         |
| Brightwood avenue, from Florida avenue to Pomeroy street.       |            | 50       |          | 753 |       |  |        |       | 1890         |
| Brightwood avenue, from Florida avenue northward.               |            |          |          |     | 5,222 |  |        |       | 1891         |
| Brightwood avenue, from Grant street to Irving.                 | 4,490      | 56       |          |     | 6,295 |  |        |       | 1889         |
| Brightwood avenue, from Irving street to Steuben.               |            | 56       |          |     | 2,749 |  |        |       | 1891         |
| Brightwood avenue, from Irving street northward.                |            | 56       |          |     | 3,040 |  |        |       | 1893         |
| Fourteenth street extended, from Florida avenue to Yale street. |            | 56       | \$7,865  |     |       |  |        |       | 1889         |
| Fourteenth street extended, from Yale street northward.         | 3,050      | 56       | \$3,725  |     |       |  |        |       | 1891         |
| Fourteenth street extended, from end of pavement northward.     |            | 56       | \$4,307  |     |       |  |        |       | 1892         |
| Fourteenth street, Kenyon to Whitney avenue.                    | 200        | 56       | 486      |     |       |  |        |       |              |
| Clifton street, from Fourteenth street extended eastward.       | 665        | 30       | \$2,221  |     |       |  |        |       | 1894         |
| Southton street, from Fourteenth street extended to Fifteenth.  | 700        | 30       | \$1,100  |     | 755   |  |        | \$483 | 1891         |
| Chapin street, from Fourteenth to Columbia road.                | 857        | 30       | \$1,702  |     | 674   |  |        | \$483 | 1892         |
| Welling place, from Fourteenth street to University place.      | 529        | 30       | \$1,781  |     |       |  |        |       | 1892         |
| Euclid place, from Fourteenth street to University place.       | 500        | 30       | \$1,668  |     |       |  |        |       | 1891         |
| Eighteenth street, from Florida avenue to Columbia road.        | 2,040      | 32       | \$7,879  |     |       |  |        |       | 1891         |
| California street, from Eighteenth to Nineteenth.               | 646        | 30       | \$2,153  |     |       |  |        |       | 1894         |
| First street, from Florida avenue to Michigan avenue.           | 5,090      | 35       | \$18,514 |     |       |  |        |       | 1891         |
| Twenty-second street, from Massachusetts avenue to R.           | 4,400      | 32       | \$2,128  |     |       |  |        |       | 1895         |
| Streets in Meridian Hill.                                       | 1,050      | 20       |          |     |       |  | 2,580  |       | 1896         |
| Le Roy place.                                                   | 330        | 28       | \$1,706  |     |       |  |        |       | 1896         |
| Phelps place.                                                   | 323        | 32       | \$1,004  |     |       |  |        |       | 1896         |
| Connecticut avenue extended.                                    | 19,169     | 50       | \$2,195  |     |       |  | 70,228 |       | 1891         |
| Champlain avenue.                                               | 1,900      |          |          |     |       |  | 6,668  |       | 1894         |
| Linden street, from Maple avenue to Pomeroy street.             | 1,184      | 33       |          |     |       |  | 4,679  |       | 1891         |
| Linden street, from Pomeroy to College.                         | 740        | 28       |          |     |       |  | 2,537  |       | 1873         |
| Steuben street, from Brightwood avenue to Sherman street.       | 786        | 30       |          |     |       |  | 2,712  |       | 1893         |

a Permit work.

TABLE H.—Statement of character and extent of street pavements July 1, 1897—Continued.  
SUBURBAN (NORTHWEST)—Continued.

| Locality.                                                                     | Carriageway. |        |                   |                        |                   |                       |                   |                   |                        |             | Resurfaced; originally paved with— |
|-------------------------------------------------------------------------------|--------------|--------|-------------------|------------------------|-------------------|-----------------------|-------------------|-------------------|------------------------|-------------|------------------------------------|
|                                                                               | Length.      | Width. | Asphalt.          | Coal tar and concrete. | Granite.          | Cobble and blue rock. | Macadam.          | Asphalt block.    | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| Sheridan street, from Brightwood avenue to Sherman street.                    | Feet.<br>780 | 30     | Sq. yds.<br>..... | Sq. yds.<br>.....      | Sq. yds.<br>..... | Sq. yds.<br>.....     | Sq. yds.<br>2,660 | Sq. yds.<br>..... | Sq. yds.<br>.....      | 1889        | .....                              |
| N. e. c. ut road, from Thirty-fifth to Thirty-ninth street.                   | 1,210        | 35     | .....             | .....                  | .....             | .....                 | 3,695             | 1,667             | .....                  | 1891        | .....                              |
| U street, from Le Droit avenue east.                                          | 415          | 35     | .....             | .....                  | .....             | .....                 | 5,000             | 2,333             | 14,800                 | 1896        | .....                              |
| Sherman avenue, Florida avenue to Whitney avenue.                             | 4,300        | 40     | .....             | .....                  | .....             | .....                 | .....             | 2,115             | .....                  | 1898        | .....                              |
| Princeton street, from Thirteenth to Fourteenth.                              | 692          | 30     | .....             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Roanoke street, from Thirteenth to Fourteenth.                                | 633          | 30     | .....             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Bohner and Bohner streets, Le Droit Park.                                     | 860          | 24     | 2,320             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Spring street, from Florida avenue to Circle.                                 | 3,300        | 50     | 11,010            | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Massachusetts avenue, from Florida avenue to Circle.                          | 454          | 50     | 2,572             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Connecticut avenue and Columbia road.                                         | 426          | 32     | 1,586             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Baltimore street, Columbia road to Twentieth.                                 | 161          | 32     | 489               | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1898        | .....                              |
| Twentieth street north of Baltimore.                                          | 16           | 500    | .....             | .....                  | .....             | .....                 | 46,000            | .....             | .....                  | .....       | .....                              |
| Canal road, Aqueduct to Chain Bridge.                                         | 14,500       | .....  | .....             | .....                  | .....             | .....                 | 73,000            | .....             | .....                  | .....       | .....                              |
| Wisconsin avenue, Tunlaw road to District line.                               | 20,000       | .....  | .....             | .....                  | .....             | .....                 | 110,000           | .....             | .....                  | 1892        | .....                              |
| Brightwood avenue, Steuben street to District line.                           | 905          | 50     | 5,081             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1892        | .....                              |
| New Hampshire avenue (Petworth), from Rock Creek Church road to Omaha street. | 920          | 35     | 3,536             | .....                  | .....             | .....                 | .....             | .....             | .....                  | 1892        | .....                              |
| Omaha street, from New Hampshire avenue to Fifth street.                      | 3,469        | .....  | .....             | .....                  | .....             | .....                 | 19,938            | .....             | .....                  | 1893        | .....                              |
| Massachusetts avenue, from Florida avenue to Belmont street.                  | 403          | .....  | .....             | .....                  | .....             | .....                 | 7,387             | .....             | .....                  | 1895        | .....                              |
| Road from Broad Branch road to Chevy Chase circle.                            | .....        | .....  | .....             | .....                  | .....             | .....                 | .....             | .....             | .....                  | .....       | .....                              |

## SUBURBAN (NORTHEAST).

| Locality.                                       | Carriageway. |        |          |                        |          |                       |          |                |                        |             | Resurfaced; originally paved with— |
|-------------------------------------------------|--------------|--------|----------|------------------------|----------|-----------------------|----------|----------------|------------------------|-------------|------------------------------------|
|                                                 | Length.      | Width. | Asphalt. | Coal tar and concrete. | Granite. | Cobble and blue rock. | Macadam. | Asphalt block. | Gravel and unimproved. | Year paved. | Year resurfaced.                   |
| First street, from Q to R.                      | 137          | 35     | 2,206    | (a)                    | .....    | .....                 | .....    | .....          | .....                  | 1891        | .....                              |
| First street, from R to alley.                  | 519          | 35     | 538      | (a)                    | .....    | .....                 | .....    | .....          | .....                  | 1892        | .....                              |
| Second street extended, from R to T.            | 1,024        | 35     | 4,213    | (a)                    | .....    | .....                 | .....    | .....          | .....                  | 1891        | .....                              |
| Q street, from Lincoln avenue to First street.  | 584          | 35     | 2,268    | (a)                    | .....    | .....                 | .....    | .....          | .....                  | 1892        | .....                              |
| Q street, from First street to Eckington place. | 430          | 35     | 1,666    | (a)                    | .....    | .....                 | .....    | .....          | .....                  | 1892        | .....                              |

Brick gutters.  
Do.





TABLE I.—*Work done under the appropriation for "Current repairs to streets, avenues, and alleys" from July 1, 1897, to June 30, 1898.*

|                              |                |             |
|------------------------------|----------------|-------------|
| Cement sidewalks.....        | square yards.. | 151.96      |
| Grading.....                 | cubic yards..  | 3,665.50    |
| Flag laid.....               | linear feet..  | 2,278.00    |
| Flag relaid.....             | do.....        | 7,766.00    |
| Curb set.....                | do.....        | 282.00      |
| Curb reset.....              | do.....        | 2,533.79    |
| Cobble paved.....            | square yards.. | 2,542.00    |
| Brick sidewalk paved.....    | do.....        | 61.00       |
| Brick sidewalk repaved.....  | do.....        | 10,756.00   |
| Granite block paved.....     | do.....        | 758.33      |
| Granite block repaved.....   | do.....        | 2,027.00    |
| Vitrified brick paved.....   | do.....        | 68.00       |
| Vitrified brick repaved..... | do.....        | 571.00      |
| Asphalt block paved.....     | do.....        | 218.00      |
| Asphalt block repaved.....   | do.....        | 2,301.00    |
| Asphalt tile sidewalk.....   | do.....        | 447.00      |
| Vitrified block paved.....   | do.....        | 420.00      |
| Vitrified block repaved..... | do.....        | 141.00      |
| Gravel.....                  | do.....        | 24,724.00   |
| Cobble repaved.....          | do.....        | 10,301.00   |
| Labor.....                   |                | \$28,029.60 |
| Material.....                |                | \$1,925.78  |

TABLE K.—*Regular permit.*  
 [Jobs marked with an asterisk (\*) were executed by contractor for and paid from appropriation for fiscal year 1897 after the beginning of the fiscal year 1898. They aggregate in cost \$1,379.65.]

| No.   | Location.                                                                        | For whom done.                      | Grading. | Vitrified block paved. | Curb reset. | Curb set. | Concrete base. | Brick sidewalk paved. | Cement sidewalk. | Cement coping. | Asphalt and granite block paved. | Cobble sidewalk repaved. | Brick on edge. | Asphalt tile laid and relaid. | Cost.    |
|-------|----------------------------------------------------------------------------------|-------------------------------------|----------|------------------------|-------------|-----------|----------------|-----------------------|------------------|----------------|----------------------------------|--------------------------|----------------|-------------------------------|----------|
| *2001 | 1408 to 1420 (inclusive) Hopkins place NW.                                       | B. H. Warner & Co.                  | .....    | .....                  | .....       | .....     | .....          | .....                 | 82.66            | .....          | .....                            | .....                    | .....          | .....                         | \$105.88 |
| *2    | Northwest corner New Hampshire avenue and R street (lots 17 and 18, square 153). | H. R. Dulaney                       | .....    | .....                  | .....       | .....     | .....          | .....                 | 98.99            | .....          | .....                            | .....                    | .....          | .....                         | 136.81   |
| 3     | West side Fourteenth street NW., between Sloughton and Chapin streets.           | Antick Palmer                       | .....    | .....                  | .....       | .....     | .....          | .....                 | .....            | .....          | .....                            | .....                    | .....          | 473.00                        | 255.99   |
| 4     | West side First street NW., between Indiana avenue and D street.                 | W. M. Galt & Co.                    | .....    | .....                  | .....       | .....     | .....          | .....                 | .....            | .....          | 121.00                           | .....                    | .....          | .....                         | 75.03    |
| *5    | Southeast corner Twenty-first and O streets NW.                                  | A. Crawford                         | .....    | .....                  | 61.65       | 5.15      | .....          | .....                 | 80.58            | .....          | .....                            | .....                    | .....          | .....                         | 116.89   |
| 6     | 12th and South street SE.                                                        | Joseph W. Meyers                    | .....    | .....                  | .....       | 13.94     | .....          | .....                 | 86.06            | .....          | .....                            | .....                    | .....          | .....                         | 12.20    |
| 7     | 3350 3352, and 3354 M street NW.                                                 | John S. Larcombe                    | .....    | .....                  | 12.50       | .....     | .....          | .....                 | .....            | .....          | .....                            | .....                    | .....          | .....                         | 82.01    |
| 8     | Southeast corner Florida avenue and R street.                                    | William H. De Lacy                  | 12.00    | .....                  | .....       | .....     | .....          | .....                 | 119.72           | .....          | .....                            | .....                    | .....          | .....                         | 118.16   |
| 9     | South side Chapin street NW., from Fourteenth street to first alley thereof.     | T. J. Fisher & Co. (Antick Palmer). | 4.00     | .....                  | 10.00       | .....     | .....          | .....                 | .....            | .....          | .....                            | .....                    | .....          | 152.00                        | 74.18    |
| 10    | 1515 K street NW.                                                                | Mrs. Ellen N. Warder                | .....    | .....                  | .....       | .....     | .....          | .....                 | 85.32            | .....          | .....                            | .....                    | .....          | .....                         | 79.73    |
| *11   | 1321, 1523, and 1525 Fourteenth street NW.                                       | Conrad Becker                       | 2.50     | .....                  | 73.00       | .....     | .....          | .....                 | 107.45           | .....          | .....                            | .....                    | .....          | .....                         | 130.14   |
| 12    | Rear of 1529 Rhode Island avenue NW, (square 195).                               | Ellen M. Ware                       | .....    | .....                  | .....       | .....     | .....          | .....                 | .....            | .....          | 35.00                            | .....                    | .....          | .....                         | 66.45    |
| *13   | Around northeast corner Phelps and Le Roy places.                                | Mrs. Jenniss Miller                 | .....    | .....                  | .....       | .....     | .....          | .....                 | 133.01           | .....          | .....                            | .....                    | .....          | .....                         | 170.38   |
| 14    | Front of 924 and 925 Seventh street NW.                                          | M. Goldenberg                       | .....    | .....                  | 28.00       | .....     | .....          | .....                 | 59.65            | .....          | .....                            | .....                    | .....          | .....                         | 62.06    |
| *15   | Front of 217 A street SE.                                                        | Grant Parish                        | .....    | .....                  | 24.70       | .....     | .....          | .....                 | 17.66            | .....          | 2.50                             | .....                    | .....          | .....                         | 29.83    |
| *16   | 1309 Rhode Island avenue NW.                                                     | F. B. Pyle                          | .....    | .....                  | 22.10       | .....     | .....          | .....                 | 29.89            | .....          | .....                            | .....                    | .....          | .....                         | 59.71    |
| 17    | 1701 V street NW.                                                                | H. L. Enell                         | .....    | .....                  | 68.90       | .....     | .....          | .....                 | 58.48            | .....          | .....                            | .....                    | .....          | .....                         | 138.73   |
| 18    | 1540 North Capitol street.                                                       | R. E. Meddaugh                      | 5.72     | .....                  | .....       | .....     | .....          | .....                 | 81.67            | .....          | .....                            | .....                    | .....          | .....                         | 78.50    |
| 21    | 1807 Fourteenth street NW.                                                       | Dr. W. S. McNairy                   | .....    | .....                  | .....       | .....     | .....          | .....                 | 10.62            | .....          | .....                            | .....                    | .....          | .....                         | 9.89     |
| 22    | 1708 S street NW.                                                                | William B. King                     | .....    | .....                  | 30.00       | .....     | .....          | .....                 | 23.15            | .....          | .....                            | .....                    | .....          | .....                         | 35.75    |
| 23    | Southwest corner Seventeenth and W streets NW.                                   | H. F. Woodard                       | .....    | .....                  | .....       | .....     | .....          | .....                 | 108.36           | .....          | .....                            | .....                    | .....          | .....                         | 101.26   |

TABLE K.—Regular permit—Continued.

| No. | Location.                                                                                           | For whom done.              | Grad-<br>ing. | Vitri-<br>fied<br>block<br>paved. | Curb<br>reaset. | Curb<br>set. | Con-<br>crete<br>base. | Brick<br>side-<br>walk<br>paved. | Cement<br>side-<br>walk. | Cement<br>coping. | As-<br>phalt<br>and<br>granite<br>block<br>paved. | Cobble<br>re-<br>paved. | Brick<br>side-<br>walk<br>re-<br>paved. | Brick<br>on<br>edge. | As-<br>phalt<br>tile<br>laid<br>and<br>relaid. | Cost.   |
|-----|-----------------------------------------------------------------------------------------------------|-----------------------------|---------------|-----------------------------------|-----------------|--------------|------------------------|----------------------------------|--------------------------|-------------------|---------------------------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------------------------------|---------|
|     |                                                                                                     |                             | Cu. yds.      | Sq. yds.                          | Lin. ft.        | Lin. ft.     | Cu. yds.               | Sq. yds.                         | Sq. yds.                 | Lin. ft.          | Sq. yds.                                          | Sq. yds.                | Sq. yds.                                | Sq. yds.             | Sq. yds.                                       |         |
| 24  | 926 Louisiana avenue N.W. ....                                                                      | Golden, Love & Co.          |               |                                   |                 |              |                        |                                  | 77.48                    |                   |                                                   |                         |                                         |                      |                                                | \$76.47 |
| 25  | Evening street N.W., between<br>F. and G. ....                                                      | S. H. Edmonston.            |               |                                   | 23.60           | 13.50        |                        |                                  | 34.65                    |                   |                                                   |                         |                                         |                      |                                                | 45.68   |
| 26  | F. of 1326 Princeton street<br>N.W. ....                                                            | Samuel R. Scharf            |               |                                   |                 |              |                        |                                  |                          |                   | 5.00                                              |                         |                                         |                      |                                                | 12.97   |
| 27  | SE. side Twelfth street<br>S.E., front of No. 315.                                                  | William Wagner.             | 3.00          | 13.00                             | 8.00            |              |                        |                                  |                          |                   |                                                   | 4.00                    |                                         |                      |                                                | 26.84   |
| 28  | Front of 1622 to 1628, inclu-<br>sive, Sixteenth street N.W.                                        | F. C. Stevens.              |               |                                   | 85.70           |              |                        |                                  | 124.40                   |                   |                                                   |                         |                                         |                      |                                                | 127.05  |
| 29  | Front of 1629 Fourteenth<br>street N.W.                                                             | F. B. Pyle.                 | .97           |                                   | 23.00           |              |                        |                                  | 34.66                    |                   |                                                   |                         |                                         |                      |                                                | 55.70   |
| 30  | Front of 1302, 1304, and 1306<br>Lydecker avenue N.W.                                               | R. B. Brown                 |               |                                   |                 |              |                        |                                  | 34.38                    |                   |                                                   |                         |                                         |                      |                                                | 32.13   |
| 31  | East side Holmead avenue,<br>from Whitney avenue to<br>middle of lot 6, block 42.                   | .....do                     | 30.50         |                                   |                 |              |                        |                                  | 137.34                   |                   |                                                   |                         |                                         |                      |                                                | 138.00  |
| 32  | South side Columbia road,<br>between Florida and Cal-<br>ifornia avenues.                           | Mrs. Dean                   | 9.20          | 5.49                              | 3.60            | 19.27        |                        |                                  |                          |                   | 13.47                                             |                         |                                         |                      |                                                | 61.58   |
| 33  | Northwest corner Fourteenth<br>and F streets N.W.                                                   | John E. Willard             | 3.86          |                                   |                 | 91.80        |                        |                                  |                          |                   |                                                   |                         |                                         |                      |                                                | 87.20   |
| 34  | Northeast corner Eleventh<br>and M streets N.W.                                                     | R. L. Elliott.              |               |                                   | 128.50          |              |                        |                                  | 330.57                   |                   |                                                   |                         |                                         |                      |                                                | 334.17  |
| 35  | Front of 1500 Wyoming ave-<br>nue N.W.                                                              | W. A. Kimmel                |               |                                   |                 |              |                        |                                  | 85.56                    |                   |                                                   |                         |                                         |                      |                                                | 79.96   |
| 36  | Front of lots 91, 92, and 93,<br>square 135, west side Seven-<br>teenth street, between Q<br>and R. | Hornblower & Mar-<br>shall. |               |                                   | 77.00           |              |                        |                                  | 63.95                    |                   |                                                   |                         |                                         |                      |                                                | 71.10   |
| 37  | Front of 119 Second street N.E.                                                                     | George W. Boyd              |               |                                   |                 |              |                        |                                  | 16.76                    |                   |                                                   |                         |                                         |                      |                                                | 15.67   |
| 38  | Corner Fifteenth and N streets<br>N.W.                                                              | W. A. Saunders.             |               |                                   |                 |              |                        |                                  | 147.73                   |                   |                                                   |                         |                                         |                      |                                                | 139.15  |
| 39  | Front of 924 Louisiana ave-<br>nue N.W.                                                             | Chapin & Sacks              |               |                                   | 18.80           |              |                        |                                  | 81.02                    |                   |                                                   |                         |                                         |                      |                                                | 79.18   |
| 40  | Front of lots 15, 16, and 17,<br>square 71, Twenty-second<br>street, between L and M.               | James T. Gibbs.             |               |                                   | 64.60           |              |                        |                                  | 62.00                    |                   |                                                   |                         |                                         |                      |                                                | 69.94   |
| 41  | Front of 907 Sixth street S.W.                                                                      | M. Ullman                   |               | 10.67                             |                 |              |                        |                                  |                          |                   |                                                   |                         |                                         |                      |                                                | 23.66   |
| 42  | Front of 1309 P street N.W.                                                                         | R. Ross Perry               |               | 22.90                             |                 |              |                        |                                  | 22.50                    |                   |                                                   |                         |                                         |                      |                                                | 26.68   |
| 43  | Front of 414 and 416 Massa-<br>chusetts avenue N.W.                                                 | C. W. Handy                 |               | 34.30                             |                 |              | 1.50                   |                                  | 44.45                    |                   |                                                   |                         |                                         |                      |                                                | 45.86   |



TABLE K.—Regular permit—Continued.

| No. | Location.                                                                                                                              | For whom done.      | Grading. | Vitrified block paved. | Curb reset. | Curb set. | Concrete base. | Brick sidewalk paved. | Cement sidewalk. | Cement coping. | Asphalt and granite block paved. | Cobble repaved. | Brick sidewalk repaved. | Brick on edge. | Asphalt laid and relaid. | Cost.   |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|------------------------|-------------|-----------|----------------|-----------------------|------------------|----------------|----------------------------------|-----------------|-------------------------|----------------|--------------------------|---------|
|     |                                                                                                                                        |                     | Cu. yds. | Sq. yds.               | Lin. ft.    | Lin. ft.  | Cu. yds.       | Sq. yds.              | Sq. yds.         | Lin. ft.       | Sq. yds.                         | Sq. yds.        | Sq. yds.                | Sq. yds.       | Sq. yds.                 |         |
| 67  | Front of lot 21, Reservation A, south side Pennsylvania avenue, between Third and Fourth-and-a-half streets. Front of 1355 Ohio avenue | George J. Mueller   |          |                        | 24.50       |           |                |                       | 57.70            |                |                                  |                 |                         |                |                          | \$57.00 |
| 68  | Front of 1355 Ohio avenue                                                                                                              | Thomas Francis, jr. | 5.50     |                        | 18.90       |           |                |                       | 24.86            |                |                                  |                 |                         |                |                          | 23.73   |
| 69  | On Holmead avenue, at the northeast corner of Lydecker avenue.                                                                         | O. R. Jones         | 20.00    |                        |             |           |                |                       | 90.57            |                |                                  |                 |                         |                |                          | 94.05   |
| 70  | Front of 726 and 728 Thirteenth street N.E.                                                                                            | Mrs. Ida Geler      | 9.27     |                        | 18.10       | 111.70    |                |                       | 126.32           |                |                                  |                 |                         |                |                          | 220.63  |
| 71  | Front of 1010 to 1016 I street N.W.                                                                                                    | U. E. Edmonston     |          |                        | 82.00       |           |                |                       | 89.25            |                |                                  |                 |                         |                |                          | 93.73   |
| 72  | Northwest corner Maple and Le Droit avenues.                                                                                           | Benjamin Lefevre    | 140.00   |                        |             |           |                |                       | 121.01           |                |                                  |                 |                         |                |                          | 168.08  |
| 73  | Front of 2930 Fourteenth street N.W.                                                                                                   | William D. Hoover   | 5.50     |                        |             |           |                |                       | 23.02            |                |                                  |                 |                         |                |                          | 23.84   |
| 74  | Front of 2936 Fourteenth street N.W.                                                                                                   | Dr. I. S. Stone     | 5.50     |                        |             |           |                |                       | 22.13            |                |                                  |                 |                         |                |                          | 23.79   |
| 75  | On Heckman street S.E., southeast corner of First.                                                                                     | John A. Hamilton    | 51.76    |                        | 10.70       | 129.70    |                |                       | 53.98            |                |                                  |                 |                         |                |                          | 188.00  |
| 76  | Front of 418 Massachusetts avenue.                                                                                                     | G. Voigt            | 5.50     |                        | 15.60       |           |                |                       | 21.96            |                |                                  |                 |                         |                |                          | 24.51   |
| 77  | Front of 601 to 609 Thirteenth street N.W.                                                                                             | Ross Thompson       |          |                        |             |           |                |                       | 159.46           |                |                                  |                 |                         |                |                          | 149.02  |
| 78  | Parking space front of 611 and 613 Thirteenth street N.W.                                                                              |                     |          |                        |             |           |                |                       | 48.51            |                |                                  |                 |                         |                |                          | 46.29   |
| 79  | Front of 110 Second street S.E.                                                                                                        | Flora B. Cabell     |          |                        |             |           |                |                       | 34.74            |                |                                  |                 |                         |                |                          | 33.85   |
| 80  | In parking front of 612 Thirteenth street N.W.                                                                                         | J. R. Freeman       |          |                        |             |           |                |                       | 37.48            |                |                                  |                 |                         |                |                          | 38.00   |
| 81  | Front of lots 47, 48, and 49, square 82, Connecticut avenue, between R and S streets.                                                  | George S. Cooper    |          |                        |             |           |                |                       | 107.94           |                |                                  |                 |                         |                |                          | 100.87  |
| 82  | South side Yale street N.W.; Thirteenth and Fourteenth, front of lots 26 to 34, inclusive, block 81.                                   | George E. Emmons    | 39.00    |                        |             |           |                |                       | 183.89           |                |                                  |                 |                         |                |                          | 186.18  |

|      |                                                                                    |                              |          |       |        |          |       |        |          |      |  |          |
|------|------------------------------------------------------------------------------------|------------------------------|----------|-------|--------|----------|-------|--------|----------|------|--|----------|
| 83   | Northwest corner Fourteenth and Binney streets NW.                                 | Albert Carry                 | 3.79     |       |        |          | 90.30 | 198.32 |          |      |  | 264.90   |
| 84   | Front of 3122 P street NW.                                                         | Edw. Schneider               | 1.50     | 13.50 | 6.00   | 1.00     |       |        |          |      |  | 24.88    |
| 85   | Front of 1015 M street NW.                                                         | Maria L. Boardman            |          |       | 26.50  |          |       | 57.28  |          |      |  | 56.87    |
| 86   | Front of 2901 Thirteenth street NW.                                                | Solomon Lansburgh            | 1.66     |       |        |          | 20.00 |        |          |      |  | 16.67    |
| 87   | Southwest corner Sixth and B streets NE.                                           | S. C. Schaffer               | 3.36     |       | 44.00  |          | 40.50 | 154.42 |          |      |  | 168.32   |
| 88   | Front of 614 Thirteenth street NW (parking).                                       | Matthew Trimble              |          |       |        |          |       | 43.80  |          |      |  | 46.00    |
| 89   | Front of 1114 G street NW.                                                         | James W. Orme                |          |       |        |          |       | 36.31  |          |      |  | 33.94    |
| 90   | Corner Fourteenth and F streets NW. (Fourteenth street site).                      | The Cranford Pav-<br>ing Co. |          |       |        |          |       | 147.23 |          |      |  | 137.58   |
| 91   | Front of 928 Louisiana ave-<br>nue NW.                                             | Golden, Love & Co.           |          |       | 20.20  |          |       | 86.00  |          |      |  | 83.45    |
| 92   | Front of 1311 P street NW.                                                         | S. B. Holbird                |          |       | 32.00  |          |       | 22.55  |          |      |  | 26.20    |
| 93   | Corner Twenty-second and P streets NW.                                             | Edw. Conover                 | 1.87     |       |        |          | 22.50 | 28.16  |          |      |  | 32.88    |
| 94   | Northeast corner Eighteenth and N streets NW.                                      | The Cranford Pav-<br>ing Co. | 3.36     |       |        |          | 80.00 | 121.94 |          |      |  | 191.22   |
| 95   | 616, 618, and 620 Thirteenth street NW. (in parking).                              | C. C. Willard                |          |       |        |          |       | 170.97 |          |      |  | 161.83   |
| 96   | Front of 1718, 1720, and 1722 Twenty-first street NW.                              | R. W. Walker &<br>Sons.      |          |       |        |          |       | 63.33  |          |      |  | 59.18    |
| 97   | Front of 3436 Thirteenth street NW.                                                | J. W. Herron                 |          |       |        |          |       | 32.82  |          |      |  | 30.67    |
| 98   | 201 A street SE. (Second street site).                                             | Flora B. Cabell              |          |       |        |          |       | 85.55  |          |      |  | 81.82    |
| 99   | Front of 2017 Q street NW.                                                         | Robertean Buchan-<br>an.     |          |       |        |          |       | 18.24  |          |      |  | 17.04    |
| 2100 | South side Wyoming avenue, west of Connecticut ave-<br>nue.                        | John B. Wimer                |          |       | 18.00  |          |       | 95.39  |          |      |  | 93.82    |
| 1    | East side New Hampshire av-<br>enue, between N and Twen-<br>tieth streets NW.      | G. F. Whiting                | 1.05     |       | 20.40  | 25.03    |       | 268.92 |          |      |  | 310.42   |
| 2    | Front of 1205 Nineteenth street NW.                                                | John I. Stoddard             |          |       | 25.00  |          |       | 29.38  |          |      |  | 30.61    |
| 3    | Alley, square 913, between F and G, Eighth and Ninth NE.                           | M. I. Weller                 | 1,438.00 |       | 6.00   | 1,090.00 |       | 868.25 | 1,445.00 | 6.00 |  | 4,620.14 |
| 4    | 1237 Harvard street, 2903-2905 Thirteenth street NW.                               | L. E. Brenninger             | 7.01     |       |        | 84.40    |       |        |          |      |  | 70.36    |
| 5    | 3127 N street NW.                                                                  | M. V. Moran                  |          |       |        |          |       | 23.05  |          |      |  | 26.21    |
| 6    | East side Twenty-first street NW, from F street to alley north.                    | John L. Weaver               |          |       | 123.20 | 14.00    |       | 137.17 |          |      |  | 150.45   |
| 9    | Front of lot 20, square 653, on Oneak street SW., be-<br>tween N and O streets NW. | James Martin                 | 88.00    |       |        |          |       |        | 133.00   |      |  | 87.50    |
| 10   | Front of 1322 Twelfth street NW.                                                   | T. A. Harding                |          |       |        |          |       | 21.78  |          |      |  | 20.35    |

TABLE K.—Regular permit—Continued.

| No. | Location.                                                                   | For whom done.            | Grading. | Vitrified block paved. | Curb reset. | Curb set. | Concrete base. | Brick sidewalk paved. | Cement sidewalk. | Cement coping. | Asphalt and granite block paved. | Cobble re-paved. | Brick sidewalk repaved. | Brick on edge. | Asphalt tile laid and relaid. | Cost.   |
|-----|-----------------------------------------------------------------------------|---------------------------|----------|------------------------|-------------|-----------|----------------|-----------------------|------------------|----------------|----------------------------------|------------------|-------------------------|----------------|-------------------------------|---------|
| 11  | Southwest corner Fourteenth and Binney streets NW., Fourteenth-street side. | T. A. Harding             | Cu. yds. | Sq. yds.               | Lin. ft.    | Lin. ft.  | Cu. yds.       | Sq. yds.              | Sq. yds.         | Lin. ft.       | Sq. yds.                         | Sq. yds.         | Sq. yds.                | Sq. yds.       | Sq. yds.                      | \$72.12 |
| 12  | On Fifteenth-street NW., Front of 1502                                      | C. A. Didden.             |          |                        |             |           |                |                       | 5.14             |                |                                  |                  |                         |                |                               | 4.82    |
| 14  | Portner Flats, Front of 1502                                                | S. E. Lewis               | 1.42     |                        | 33.80       |           |                |                       | 54.36            |                |                                  |                  |                         |                |                               | 83.44   |
| 15  | Front of 3429 Holmead avenue NW., block 43, Holmead corner NW.              | Charles C. Adams          | 7.00     |                        |             |           |                |                       | 33.50            |                |                                  |                  |                         |                |                               | 35.56   |
| 16  | Front of lot 6, block 43, Holmead corner NW.                                | Henry Evans               | 7.00     |                        |             |           |                |                       | 33.50            |                |                                  |                  |                         |                |                               | 35.57   |
| 17  | Front of 937 I street NW., due NW.                                          | Attorney-General McKenna. |          |                        |             |           |                |                       | 6.68             |                |                                  |                  |                         |                |                               | 6.25    |
| 19  | Front of 937 I street NW., due NW.                                          | N. B. Lamer               |          |                        |             |           |                |                       | 7.78             |                |                                  |                  |                         |                |                               | 13.09   |
| 20  | Front of Savoy Department house, 2804                                       | O. W. White               |          |                        |             |           |                |                       | 119.22           |                |                                  |                  |                         |                |                               | 111.42  |
| 21  | South Bates street NW., between North Capitol and First.                    | G. M. Sternberg           | 36.62    |                        | 139.90      |           |                |                       | 138.09           |                |                                  |                  |                         |                |                               | 254.91  |
| 22  | Front of 915, 917, and 919 Seventh street NW.                               | Rose M. Taylor            |          | 63.50                  |             |           |                |                       | 99.16            |                |                                  |                  |                         |                |                               | 107.99  |
| 23  | Front of 1207 Nineteenth street NW.                                         | B. H. Johnston            |          | 19.80                  |             |           |                |                       | 23.83            |                |                                  |                  |                         |                |                               | 24.77   |
| 24  | Front of lot 63, square 922 (D street NE., between Tenth and Eleventh).     | A. M. Johnson             | 1.38     |                        | 16.60       |           |                |                       | 17.61            |                |                                  |                  |                         |                |                               | 20.10   |
| 25  | Front of lot 69, square 922 (D street NE., between Tenth and Eleventh).     | William Z. Ball           | 1.38     |                        | 16.60       |           |                |                       | 15.82            |                |                                  |                  |                         |                |                               | 18.43   |
| 26  | Southwest corner Twenty-first street and Massachusetts avenue.              | B. H. Warner              | 10.00    |                        | 179.00      |           |                |                       | 218.64           |                |                                  |                  |                         |                |                               | 238.09  |
| 27  | Front of 1631 Nineteenth street NW.                                         | T. A. Harding             |          | 20.00                  |             |           |                |                       | 22.72            |                |                                  |                  |                         |                |                               | 23.75   |
| 30  | Corner Wyoming street, Woodley lane and Columbia road.                      | George Truesdell          | 15.46    |                        | 303.10      |           |                |                       | 594.11           |                |                                  |                  |                         |                |                               | 839.23  |



|    |                                                                                                                                                                                             |                                   |        |        |        |        |        |      |  |         |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------|--------|--------|--------|--------|------|--|---------|
| 31 | Front of 1297 and 1209 H street N.E.                                                                                                                                                        | C. G. Ennack                      |        |        |        |        | 63.16  |      |  | \$80.77 |
| 32 | Front of 625 F street NW                                                                                                                                                                    | Munn & Co.                        |        |        |        |        | 62.58  |      |  | 58.48   |
| 33 | Front of 2033 Florida avenue NW.                                                                                                                                                            | H. C. Hansbrough                  |        |        |        |        | 3.00   |      |  | 2.86    |
| 34 | Front of lot 55, square 8 (Columbia road, east of Eighteenth street).                                                                                                                       | Waddy B. Wood                     | 2.06   |        |        | 48.30  | 39.71  |      |  | 84.40   |
| 35 | Front of lot 56, square 8 (Columbia road, east of Eighteenth street).                                                                                                                       | do                                | .92    |        |        | 22.22  | 18.06  |      |  | 36.46   |
| 36 | Front of lot 57, square 8 (Columbia road, east of Eighteenth street).                                                                                                                       | do                                | .84    |        |        | 19.99  | 16.25  |      |  | 32.82   |
| 37 | Front of lot 58, square 8 (Columbia road, east of Eighteenth street).                                                                                                                       | do                                | .82    |        |        | 21.60  | 17.56  |      |  | 35.46   |
| 38 | Northeast corner Fourteenth street and New York avenue NW.                                                                                                                                  | W. G. Peter                       | 12.47  |        |        | 297.11 | 484.41 |      |  | 754.88  |
| 39 | Front of 1813 Corcoran street NW.                                                                                                                                                           | H. J. Horn                        |        |        |        |        | 18.59  |      |  | 17.37   |
| 40 | Front of 1333 and 1335 Twenty-second street NW.                                                                                                                                             | Carl Eisenmenger                  |        |        |        |        | 47.27  |      |  | 44.17   |
| 41 | South side I street SW., between Third and Four-and-a-half streets.                                                                                                                         | J. S. Thompson                    | 18.00  | 12.00  |        | 2.50   |        |      |  | 37.99   |
| 42 | Front of 646 and 648 H street N.E.                                                                                                                                                          | Rosenberg Co.                     |        |        |        |        | 10.66  |      |  | 9.96    |
| 43 | Fifth street NW., between New York avenue and K street.                                                                                                                                     | Frank Libbey & Co.                | 25.50  |        |        | 4.00   | 5.00   |      |  | 53.98   |
| 44 | On Kansas avenue, between Savannah street and Trenton street; on Trenton street, between Kansas avenue and Eighth street, and on Eighth street, between Trenton street and Savannah avenue. | C. J. Ubhoff                      | 87.00  | 5.00   | 973.80 |        |        |      |  | 842.06  |
| 45 | South side Massachusetts avenue N.E. between Third and Fourth.                                                                                                                              | John L. Newirth                   | 4.50   | 14.00  |        | .66    |        |      |  | 23.50   |
| 46 | Alley, west half square 204, between W and V, Fifteenth and Porter place.                                                                                                                   | William H. Saunders & Co.         | 171.00 | 515.00 | 53.00  | 18.84  |        |      |  | 842.50  |
| 47 | Front of lot 87, square 195, between Rhode Island avenue and O, Fifteenth and Sixteenth streets NW.                                                                                         | George F. Huff                    | 3.00   |        |        |        | 25.50  | 3.00 |  | 48.54   |
| 48 | Front of 1723 P street NW                                                                                                                                                                   | Capt. Herbert J. Slocum, U. S. A. |        |        |        |        | 3.40   |      |  | 3.18    |

TABLE K.—Regular permit—Continued.

| No. | Location.                                                                                                  | For whom done.                   | Grading.       | Whit-<br>ting-<br>black<br>paved. | Curb<br>reset. | Curb<br>set. | Con-<br>crete<br>base. | Brick<br>side-<br>walk<br>paved. | Cement<br>side-<br>walk. | Cement<br>cop-<br>ing. | As-<br>phalt<br>and<br>granite<br>block<br>paved. | Cobble<br>re-<br>paved. | Brick<br>on<br>edge,<br>and<br>re-laid. | As-<br>phalt<br>tile<br>laid<br>and<br>re-laid. | Cost.   |
|-----|------------------------------------------------------------------------------------------------------------|----------------------------------|----------------|-----------------------------------|----------------|--------------|------------------------|----------------------------------|--------------------------|------------------------|---------------------------------------------------|-------------------------|-----------------------------------------|-------------------------------------------------|---------|
| 49  | Southeast corner Grace and Potomac streets, Georgetown.                                                    | G. H. H. Moore.....              | Cu. yds. 11.33 | .....                             | .....          | .....        | .....                  | .....                            | Sq. yds. 8.00            | Lin. ft. 8.00          | Sq. yds. 8.00                                     | .....                   | .....                                   | .....                                           | \$20.44 |
| 50  | South side D street NW, be-<br>tween First and Second.                                                     | W. M. Galt & Co. ....            | .....          | 45.00                             | .....          | .....        | 7.00                   | .....                            | .....                    | .....                  | .....                                             | 22.00                   | .....                                   | .....                                           | 76.00   |
| 51  | Front of 1302 K street NW...                                                                               | H. Lendenkohl .....              | 2.08           | .....                             | 132.00         | 25.00        | .....                  | .....                            | 199.67                   | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 227.59  |
| 52  | Front of 543 and 545 Florida<br>avenue NW...                                                               | T. W. Gilmer .....               | .....          | .....                             | .....          | .....        | .....                  | 13.00                            | .....                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 3.20    |
| 53  | Front of 1305 P street NW...                                                                               | Mrs. Mary F. Stone. ....         | .....          | .....                             | 24.58          | .....        | .....                  | .....                            | 25.64                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 27.06   |
| 54  | Front of 1305 D street NW...                                                                               | Francis & Schneider .....        | .....          | .....                             | 20.20          | .....        | .....                  | .....                            | 19.47                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 20.75   |
| 55  | Front of 547 Florida avenue<br>NW...                                                                       | Willard & Reed .....             | .....          | .....                             | .....          | .....        | .....                  | 7.50                             | .....                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 1.71    |
| 56  | On Emporia street, Langdon,<br>D. C., lots 20 to 26.                                                       | Mrs. Annie B. Fris-<br>bie. .... | .....          | .....                             | .....          | .....        | .....                  | .....                            | .....                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 63.69   |
| 57  | Alley 1282, between O and<br>road, Thirtieth and Thirty-<br>first streets NW.                              | J. T. West et al. ....           | 296.00         | 234.00                            | 11.00          | 9.42         | .....                  | .....                            | .....                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 411.13  |
| 58  | Queens Chapel road, from<br>Rhode Island avenue to<br>Frankfort street.                                    | J. W. Watson .....               | .....          | .....                             | 59.50          | .....        | .....                  | .....                            | 65.58                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 110.00  |
| 59  | Front of 1313 R street NW.                                                                                 | Robert Callahan .....            | .....          | .....                             | .....          | .....        | .....                  | .....                            | .....                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 70.95   |
| 61  | West side Fourteenth street,<br>and vacant lot next to same,<br>between Kenesaw avenue<br>and Park street. | G. A. Hundley .....              | 13.33          | 10.00                             | 1.00           | .....        | .....                  | .....                            | .....                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 28.19   |
| 62  | Northwest corner Fourth and<br>South Carolina avenue SE.                                                   | John T. Martin .....             | .....          | .....                             | .....          | .....        | .....                  | .....                            | 121.46                   | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 115.26  |
| 63  | Front of 1632 Fourteenth<br>street NW.                                                                     | Jesse Cook .....                 | .....          | .....                             | 20.00          | .....        | .....                  | .....                            | 35.29                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 35.50   |
| 64  | West side Fifteenth street<br>NW, between alley and I<br>street.                                           | James G. Hill .....              | 24.15          | .....                             | 8.00           | 208.21       | .....                  | .....                            | 217.92<br>{ 244.18 }     | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 649.37  |
| 65  | Front of 607 E street NW...                                                                                | Mrs. Sophia Vogt .....           | .....          | .....                             | 36.20          | .....        | .....                  | .....                            | 25.79                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 29.63   |
| 66  | Front of 3012 to 3026 Four-<br>teenth street NW.                                                           | Charles W. King .....            | .....          | .....                             | 9.00           | .....        | .....                  | .....                            | 152.37                   | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 143.52  |
| 67  | Front of 1400 Twenty first<br>street NW.                                                                   | C. B. Taylor .....               | 3.19           | .....                             | .....          | 75.86        | .....                  | .....                            | 114.08                   | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 188.40  |
| 68  | Front of 86 M street NW.....                                                                               | Mrs. Minnie N.<br>Smith. ....    | 1.75           | .....                             | .....          | .....        | .....                  | .....                            | 17.47                    | .....                  | .....                                             | .....                   | .....                                   | .....                                           | 16.97   |



TABLE K.—Regular permit—Continued.

| No.  | Location.                                                                      | For whom done.     | Grading. | Vitrified block paved. | Curb reset. | Curb set. | Concrete base. | Brick sidewalk paved. | Cement sidewalk. | Cement coping. | Asphalt and granite block paved. | Cobble repaved. | Brick sidewalk repaved. | Brick on edge. | Asphalt tile laid and relaid. | Cost.   |
|------|--------------------------------------------------------------------------------|--------------------|----------|------------------------|-------------|-----------|----------------|-----------------------|------------------|----------------|----------------------------------|-----------------|-------------------------|----------------|-------------------------------|---------|
| 93   | Front half of lot 2, east side of Holmead avenue.                              | W. W. Louder       | On yds.  | Sq. yds.               | Lin. ft.    | Lin. ft.  | On yds.        | Sq. yds.              | Sq. yds.         | Lin. ft.       | Sq. yds.                         | Sq. yds.        | Sq. yds.                | Sq. yds.       | Sq. yds.                      | \$15.98 |
| 94   | Front of center third of lot 8, east side of Holmead avenue.                   | H. S. Brinkerhoff  |          |                        |             |           |                |                       | 11.00            |                |                                  |                 |                         |                |                               | 10.75   |
| 95   | Front of lots 11 and 12, block 42, University place.                           | G. N. Hellprin     | 3.36     |                        |             | 79.77     |                |                       | 88.08            |                |                                  |                 |                         |                |                               | 150.00  |
| 96   | Front of north half of lot 13, block 42, University place.                     | W. T. Johnson      | .84      |                        |             | 20.00     |                |                       | 26.22            |                |                                  |                 |                         |                |                               | 44.55   |
| 97   | Front of north third of lot 8, east side of Holmead avenue.                    |                    |          |                        |             |           |                |                       | 11.60            |                |                                  |                 |                         |                |                               | 10.84   |
| 98   | Front of lot 11, east side of Holmead avenue.                                  |                    |          |                        |             |           |                |                       | 33.24            |                |                                  |                 |                         |                |                               | 31.92   |
| 99   | Front of lot 3, east side of Holmead avenue.                                   |                    |          |                        |             |           |                |                       | 33.28            |                |                                  |                 |                         |                |                               | 31.53   |
| 2200 | Front of 1430 Stoughton street.                                                | Geo. P. Whittlesey |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               |         |
| 1    | Front of lots 1217, 1218, and 1224 of lot 11.                                  | W. A. Kemmel       |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               |         |
| 2    | Front of 604 Tenth street SW.                                                  | A. Y. Lakeman      |          |                        |             |           |                |                       | 3.70             |                |                                  |                 |                         |                |                               | 3.45    |
| 3    | Front of 1742 M street NW.                                                     | John S. Larcombe   |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               |         |
| 4    | West side of Twentieth street, between Frankford and Galveston streets.        | E. A. M. Lawson    |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               | 45.65   |
| 5    | East side of Twentieth street, between Kalorama avenue and Woodley road.       | J. B. Wimeley      |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               |         |
| 6    | Front of 1315 R street NW.                                                     | Mrs. C. E. Owens   |          |                        | 32.00       |           |                |                       | 23.74            |                |                                  |                 |                         |                |                               | 26.23   |
| 7    | Front of lots 33 to 37, square 3, Kalorama Heights.                            | R. W. Walker & Son |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               |         |
| 8    | Front of lot 38, square 3, Kalorama Heights.                                   | do                 |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               |         |
| 9    | Rear of lots 63 to 74, inclusive, block 45, Holmead manor.                     | J. M. Henderson    |          |                        |             |           |                |                       |                  |                |                                  |                 |                         |                |                               | 14.96   |
| 10   | Pennsylvania avenue, corner Third street NW.                                   | Charles Mades      |          |                        | 61.20       |           |                |                       | 170.98           |                |                                  |                 |                         |                |                               | 169.16  |
| 11   | Front of lot 9, square 382, Louisiana avenue, between Ninth and Tenth streets. | John F. Borbone    | 11.37    |                        |             | 136.73    |                |                       | 285.89           |                |                                  |                 |                         |                |                               | 384.18  |



TABLE I. — Assessment work.

[Jobs marked with an asterisk (\*) were executed by contractor for and paid from appropriation for fiscal year 1897 after the beginning of the fiscal year 1898. They aggregate in cost \$21,122.99.]

[illegible]



TABLE L.—Assessment work—Continued.

| No. | Location of work.                                                                                                 | Grading. | Vitrified<br>block<br>paved. | Asphalt<br>block<br>paved. | Asphalt<br>block<br>re-<br>paved. | Cement<br>side-<br>walk<br>paved. | Brick<br>side-<br>walk<br>paved. | Brick<br>side-<br>walk<br>re-<br>paved. | Cobble.  | Curb set.        | Curb<br>reset.     | Granite<br>block<br>re-paved. | Cement<br>coping. | Cost.      |
|-----|-------------------------------------------------------------------------------------------------------------------|----------|------------------------------|----------------------------|-----------------------------------|-----------------------------------|----------------------------------|-----------------------------------------|----------|------------------|--------------------|-------------------------------|-------------------|------------|
|     |                                                                                                                   | Cu. yds. | Sq. yds.                     | Sq. yds.                   | Sq. yds.                          | Sq. yds.                          | Sq. yds.                         | Sq. yds.                                | Sq. yds. | Lin. ft.         | Lin. ft.           | Sq. yds.                      | Lin. ft.          |            |
| *42 | Oregon avenue NW., between Eighteenth and Nineteenth streets (both sides).....                                    |          |                              |                            |                                   | 554.71                            |                                  |                                         |          |                  |                    |                               |                   | \$1,206.04 |
| *43 | O street NW., between Twenty-seventh and Twenty-eighth (both sides).....                                          |          |                              |                            |                                   | 625.31                            |                                  |                                         |          | 627.72           | 54.90              |                               |                   | 1,417.74   |
| *44 | D street NE., between Ninth and Tenth (north side).....                                                           |          |                              |                            |                                   |                                   | 184.00                           | 68.00                                   |          | { 9.42<br>278.00 | 9.42<br>16.00      |                               |                   | 429.82     |
| *45 | Alleys in square 1020, between Twelfth and Thirteenth and G and I streets SE.....                                 | 1,731.00 | 3,133.00                     |                            |                                   |                                   |                                  |                                         |          | 90.84            |                    |                               |                   | 4,896.71   |
| *46 | Seventeenth street NW., between New Hampshire avenue and F street (west side).....                                |          |                              |                            |                                   | 156.59                            |                                  |                                         |          |                  |                    |                               |                   | 201.69     |
| 47  | Alleys, square 437, between D and E and Sixth and Seventh streets NW.....                                         |          | 2,414.18                     |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 4,622.09   |
| 48  | Fourteenth street NW., between Kenyon street and Whitney avenue (east side).....                                  | 78.00    |                              |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 106.70     |
| 50  | Florida avenue NW., between Fourteenth and Fifteenth streets (both sides).....                                    | 11.19    |                              |                            |                                   | 770.65                            |                                  |                                         |          | 134.79           | { 658.00<br>225.00 |                               |                   | 923.92     |
| 51  | Willard street NW., between Seventeenth and Eighteenth streets (both sides).....                                  |          |                              |                            |                                   |                                   |                                  |                                         |          | 1,695.00         |                    |                               |                   | 1,385.67   |
| 52  | Alley, square 1244, between O and P streets NW.....                                                               |          |                              |                            |                                   |                                   |                                  |                                         |          | 45.00            | 28.00              |                               |                   | 197.36     |
| 53  | Alleys, square 1012, between Tennessee and North Carolina avenues, Lincoln Park, and Thirteenth street NE.....    |          | 135.00                       |                            |                                   |                                   |                                  | 18.00                                   |          |                  |                    |                               |                   | 710.04     |
| 54  | Alleys, square 280, between N and O and Twelfth and Thirteenth streets NW.....                                    | 294.00   | 488.00                       |                            |                                   |                                   |                                  |                                         |          | 70.00            |                    |                               |                   | 199.07     |
| 55  | Alley, square 248, between Thirteenth and Fourteenth and K and L streets NW.....                                  | 85.00    | 85.00                        |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 135.03     |
| 56  | Alleys, square 14, between Pennsylvania avenue and M, Twenty-fifth, and Twenty-sixth streets NW.....              | 30.00    | 80.00                        |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 2,719.64   |
| 57  | Alleys, square 133, between Eighteenth and Nineteenth and R and S streets NW.....                                 | 2,110.00 | 1,321.00                     |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 2,130.56   |
| 58  | Alley, square 177, between S and T and Sixteenth and Seventeenth streets NW.....                                  | 225.00   | 1,394.00                     |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 779.04     |
| 59  | Alleys in east half of square 212, between Fourteenth and Fifteenth and Massachusetts avenue and N street NW..... | 149.00   |                              | 379.00                     |                                   |                                   |                                  |                                         |          | 19.00            |                    |                               |                   | 247.10     |
| 60  | Alleys, square 220, between H and I and Fourteenth and Fifteenth streets NW.....                                  | 79.00    | 150.00                       |                            |                                   |                                   |                                  |                                         |          |                  |                    |                               |                   | 1,572.33   |
|     |                                                                                                                   | 376.00   | 1,024.00                     |                            |                                   |                                   |                                  |                                         |          | 18.84            | 104.00             |                               |                   |            |





TABLE L.—*Assessment work*—Continued.

| No. | Location of work.                                                                                                                                                | Grading<br>Cu. yds. | Vitrified<br>block<br>paved. | Asphalt<br>block<br>paved. | Asphalt<br>block<br>re-<br>paved. | Cement<br>side-<br>walk.<br>paved. | Brick<br>side-<br>walk<br>paved. | Brick<br>side-<br>walk<br>re-<br>paved. | Cobble.  | Curb set. | Curb<br>reset. | Granite<br>block<br>repaired. | Cement<br>copying. | Cost.      |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------|----------------------------|-----------------------------------|------------------------------------|----------------------------------|-----------------------------------------|----------|-----------|----------------|-------------------------------|--------------------|------------|
| 90  | R street NW. (both sides), between Twenty-first street and Massachusetts avenue                                                                                  |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    |            |
| 91  | Rhode Island avenue (north side), from Thirteenth to Fourteenth streets                                                                                          |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    | \$1,041.53 |
| 92  | B street NW. (north side), from Ninth to Tenth streets, and on west side of Ninth street NW. between Louisiana square and B street, in front of Louisiana square |                     |                              |                            |                                   |                                    |                                  |                                         |          | 9.00      |                |                               |                    |            |
| 93  | G street NW. (both sides), between Second street and New Jersey avenue                                                                                           | 5.57                |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    |            |
| 94  | Morris street NE., between Sixth and Seventh streets (both sides)                                                                                                | 148.00              |                              |                            |                                   | 798.95                             |                                  | 33.00                                   | 8.00     | 67.10     | 687.55         |                               |                    | 988.20     |
| 95  | Q street NW., between Seventeenth and Eighteenth streets (north side)                                                                                            | 1.00                |                              |                            |                                   | 793.89                             |                                  |                                         | 1,274.00 | 12.00     | 4.00           |                               |                    | 1,090.44   |
| 97  | T street NW., from Twenty-third street to New Hampshire avenue (both sides)                                                                                      | 21.40               |                              |                            |                                   | 855.59                             |                                  |                                         |          |           | 767.35         |                               |                    | 992.08     |
| 98  | North Capitol street, between Q and O streets (both sides)                                                                                                       |                     |                              |                            |                                   |                                    |                                  |                                         |          | 1,349.00  |                |                               |                    | 813.68     |
| 99  | Tenth street NE., between East Capitol and C streets (both sides)                                                                                                |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    | 1,038.74   |
| 101 | Front of 1200 and 1204 N street NW.                                                                                                                              |                     |                              |                            |                                   |                                    |                                  |                                         |          | 77.32     |                |                               |                    | 39.83      |
| 102 | Thirteenth street NW., between F and G (both sides)                                                                                                              | 22.38               |                              |                            |                                   |                                    |                                  |                                         |          | 532.83    |                | 48.00                         |                    | 524.52     |
| 103 | First and L streets SW.                                                                                                                                          | 20.00               |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    | 22.83      |
| 104 | Howard street, from Seventh to Thirteenth (both sides)                                                                                                           |                     |                              |                            |                                   |                                    |                                  |                                         |          | 176.00    |                |                               |                    | 149.49     |
| 105 | Thirteenth street NW., between Clifton and Howard streets (both sides)                                                                                           |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    |            |
| 106 | Alleys, square 1039, between A and B and Fourteenth and Fifteenth streets SE.                                                                                    |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    |            |
| 107 | Yale street NW., between Twelfth and Thirteenth, front of lots 9, 10, 11, and 12, block 25, Columbia Heights                                                     |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    |            |
| 108 | Thirteenth street NW., between K and S (east side)                                                                                                               | 31.00               |                              |                            |                                   | 226.75                             |                                  |                                         |          |           | 6.00           |                               |                    | 224.05     |
| 109 | Lot A, square 238, 1817 Fourteenth street NW.                                                                                                                    |                     |                              |                            |                                   |                                    |                                  |                                         |          |           |                |                               |                    |            |
| 110 | Princeton street NW., between Thirteenth and Fourteenth (north side)                                                                                             |                     |                              |                            |                                   | 35.59                              |                                  |                                         |          |           |                |                               |                    | 33.18      |
| 111 | Alleys, block 3, rear Mott school building, part Howard University subdivision                                                                                   |                     |                              |                            |                                   | 497.68                             |                                  |                                         |          |           |                |                               |                    | 468.34     |
| 112 |                                                                                                                                                                  | 38.00               |                              | 362.00                     |                                   |                                    |                                  |                                         |          |           | 41.00          |                               |                    | 605.71     |



TABLE L.—Assessment work—Continued.

| No. | Location of work.                                                                                                            | Grading.<br>Cu. yds. | Vitrified<br>block<br>paved. | Asphalt<br>block<br>paved. | Asphalt<br>block<br>re-<br>paved. | Cement<br>side-<br>walk<br>paved. | Brick<br>side-<br>walk<br>paved. | Brick<br>side-<br>walk<br>re-<br>paved. | Cobble. | Curb set. | Curb<br>reset. | Granite<br>block<br>repaved. | Cement<br>coping. | Cost.    |
|-----|------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------|----------------------------|-----------------------------------|-----------------------------------|----------------------------------|-----------------------------------------|---------|-----------|----------------|------------------------------|-------------------|----------|
| 139 | Massachusetts avenue NW., between Eighteenth and Nineteenth streets (south side).                                            |                      |                              |                            |                                   | 166.54                            |                                  |                                         |         |           |                |                              | Lin. ft.          | \$167.64 |
| 140 | Rhode Island avenue NW., between Sixteenth and Seventeenth streets (both sides)                                              |                      |                              |                            |                                   |                                   |                                  |                                         |         |           |                |                              |                   |          |
| 141 | Virginia avenue SW., between Third and Fourth and a-half streets (north side)                                                | 73.00                |                              |                            |                                   | 535.84                            |                                  |                                         |         | 218.45    | 451.05         |                              |                   | 731.00   |
| 142 | First street SW., between B and C (west side).                                                                               | 4.30                 |                              |                            |                                   | 509.14                            |                                  |                                         |         | 58.57     | 436.58         |                              |                   | 605.17   |
| 143 | Fifteenth street NW., between K and L (both sides).                                                                          |                      |                              |                            |                                   |                                   |                                  |                                         |         |           |                |                              |                   |          |
| 144 | Juniper street NW., between Maple and Spence streets (west side).                                                            | 23.68                |                              |                            |                                   | 254.60                            |                                  |                                         |         | 273.30    | 17.80          |                              |                   | 473.30   |
| 145 | Florida avenue NW., (east side). Twenty-first and R Pennsylvania avenue NW., between Nine-                                   |                      |                              |                            |                                   |                                   |                                  |                                         |         |           |                |                              |                   |          |
| 146 | teenth and Twentieth streets (north side).                                                                                   |                      |                              |                            |                                   |                                   |                                  |                                         |         | 443.63    |                |                              |                   | 404.16   |
| 147 | Florida avenue NW., between Eleventh and Twelfth streets (south side).                                                       | 19.59                |                              |                            |                                   | 307.92                            |                                  |                                         |         | 236.00    | 34.55          |                              |                   | 530.20   |
| 148 | Pennsylvania avenue SE., between Third and Fourth streets (north side).                                                      | 15.70                |                              |                            |                                   | 686.61                            |                                  |                                         |         | 373.95    | 6.60           |                              |                   | 1,071.43 |
| 149 | Twenty-third street NW., between M and N (east side).                                                                        | 114.33               |                              |                            |                                   | 851.44                            |                                  |                                         |         | 603.02    | 11.60          |                              |                   | 1,452.72 |
| 150 | Eight street SE., between I and L (west side).                                                                               | 22.86                |                              |                            |                                   | 750.22                            |                                  |                                         |         | 544.27    | 10.00          |                              |                   | 1,252.40 |
| 152 | O street NW., between Third street and New Jersey avenue (south side).                                                       |                      |                              |                            |                                   |                                   |                                  |                                         |         |           |                |                              |                   |          |
| 153 | H street NW., between Thirteenth and Fourteenth (north side).                                                                | 27.00                |                              |                            |                                   | 185.31                            |                                  |                                         |         |           | 158.70         |                              |                   | 212.66   |
| 154 | Seventeenth street NW., between Pennsylvania avenue and H street (both sides).                                               |                      |                              |                            |                                   |                                   |                                  |                                         |         |           |                |                              |                   |          |
| 155 | R street NW., between Florida avenue and Twenty-first street (north side).                                                   |                      |                              |                            |                                   | 232.47                            |                                  |                                         |         |           |                |                              |                   | 235.40   |
| 156 | Thirteenth street NE., between T street and Maryland avenue (west side).                                                     | 2.40                 |                              |                            |                                   | 278.78                            |                                  |                                         |         | 23.90     |                |                              |                   | 296.94   |
| 157 | Corcoran street NW., between Thirteenth and Fourteenth, and on south side from Fourteenth street east to alley (north side). |                      |                              |                            |                                   |                                   |                                  |                                         |         |           |                |                              |                   |          |
| 158 | E street NE., between Sixth and Seventh (north side).                                                                        | 71.58                |                              |                            |                                   | 701.96                            |                                  |                                         |         | 19.09     | 620.00         |                              |                   | 796.20   |
| 159 | Four-and-a-half street SW., between F and G (east side).                                                                     | 2.16                 |                              |                            |                                   | 902.97                            |                                  |                                         |         | 26.00     | 320.30         |                              |                   | 908.44   |
| 160 | Ninth street NW., Nos. 212 and 216 (in front of).                                                                            |                      |                              |                            |                                   | 69.30                             |                                  |                                         |         |           | 25.60          |                              |                   | 69.07    |





|     |                                                                                                                                                                                                                                                      |                 |        |  |          |      |          |        |          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|--|----------|------|----------|--------|----------|
| 202 | South Carolina avenue, between Fourteenth and Fifteenth streets SE. (north side).....                                                                                                                                                                | 37.95           |        |  |          |      | 457.21   |        | 690.39   |
| 203 | A street SE., between Third and Fourth (both sides).....                                                                                                                                                                                             | 3.60            |        |  |          |      | 44.50    | 730.50 | 801.87   |
| 204 | East Capitol street N.E., from Fifteenth street eastward to west line of lot 5, square 1095 (between Seventeenth and Eighteenth streets) (north side).....                                                                                           | 396.00<br>83.00 |        |  |          |      | 998.76   |        | 1,598.34 |
| 205 | Wyoming avenue, from Connecticut avenue westward in front of lots 31 and 32 L. E. Tuttle's subdivision of Washington Heights, and lots 41, 40, 33, 37, 100, 99, 98, and 97, of Presbury & Goddard subdivision of Washington Heights (east side)..... | 54.03           |        |  |          |      | 266.50   | 29.80  | 779.07   |
| 206 | Joint street, between Connecticut avenue and Zoological Park (both sides).....                                                                                                                                                                       |                 |        |  |          |      |          |        |          |
| 207 | Alley, square 184, between K and L and Sixteenth and Seventeenth streets NW.....                                                                                                                                                                     |                 |        |  | 1,574.00 |      |          |        | 2,661.25 |
| 209 | Alley, square 1041, between Thirteenth street and Kentucky avenue and C and D streets SE.....                                                                                                                                                        | 2,008.00        |        |  | 2,273.00 |      |          |        | 3,831.71 |
| 210 | Alley, square 334, between S street and Vermont avenue and Tenth street NW.....                                                                                                                                                                      | 94.00           | 187.00 |  |          |      |          |        | 295.38   |
| 211 | Alleys, square 542, between I and K and Third and Four-and-a-half streets SW.....                                                                                                                                                                    |                 |        |  | 8.00     | 8.00 |          |        |          |
| 212 | Alley, running north and south in block 40, Columbia College.....                                                                                                                                                                                    |                 |        |  |          |      |          |        |          |
| 213 | Alley, block 4, Trinidad, between M and N streets and Trinidad avenue N.E.....                                                                                                                                                                       |                 |        |  |          |      |          |        |          |
| 214 | Alley, square 512.....                                                                                                                                                                                                                               |                 |        |  |          |      |          |        |          |
| 215 | G street N.E., between Fourteenth and Fifteenth (north side).....                                                                                                                                                                                    | 40.17           |        |  |          |      |          |        | 955.19   |
| 216 | Bacon street NW., between Fourteenth and Fifteenth (north side).....                                                                                                                                                                                 | 68.14           |        |  |          |      | 572.62   | 57.30  | 988.20   |
| 217 | Providence street, Brookland, between Wallace (Tenth) and Duncan (Twelfth) (north side).....                                                                                                                                                         |                 |        |  |          |      | 532.05   |        |          |
| 218 | Roanoke street, between Eleventh and Thirteenth NW., and on south side in front of lots 34, 35, 36, and 37, block 27, Columbia Heights (north side).....                                                                                             | 68.90           |        |  |          |      | 824.14   | 47.00  | 801.08   |
| 219 | Alley, block 45, NW., between O and Q, about-<br>Twelfth street NW., between K and L, about-<br>thing 19, 38, and G 19, and S 19, 38, of lot 15,<br>square 280, and south 64 feet of lot 2, square<br>313 (both sides).....                          |                 |        |  |          |      |          |        | 143.29   |
| 221 | G street NW., between Eleventh and Twelfth (south side).....                                                                                                                                                                                         |                 |        |  |          |      | 148.93   | 24.00  | 259.92   |
| 222 | M street NW., between Thirty-second and Thirty-third (both sides).....                                                                                                                                                                               |                 |        |  |          |      | 276.07   |        | 1,600.18 |
| 223 | Alley, square 691, between C and D and South Capitol and New Jersey avenue SE.....                                                                                                                                                                   |                 |        |  |          |      | 1,561.67 | 31.00  |          |







TABLE M.—*Replacing sidewalks and curb around public reservations.*

| No.  | Location of work.                                                                                      | Cement<br>side-<br>walk. | Curb set.       | Curb re-<br>set. | Flag re-<br>land. | Cement<br>coping. | Brick<br>sidewalk<br>land. | Grading.        | Cost.    |
|------|--------------------------------------------------------------------------------------------------------|--------------------------|-----------------|------------------|-------------------|-------------------|----------------------------|-----------------|----------|
|      |                                                                                                        | <i>Sq. yds.</i>          | <i>Lin. ft.</i> | <i>Lin. ft.</i>  | <i>Sq. yds.</i>   | <i>Lin. ft.</i>   | <i>Sq. yds.</i>            | <i>Cu. yds.</i> |          |
| 7019 | McPherson square (I street side)                                                                       | 293.60                   |                 |                  |                   |                   |                            |                 | \$271.08 |
| 20   | Reservation bounded by Twenty-first street, New Hampshire avenue, and M street                         |                          |                 |                  |                   |                   |                            |                 |          |
| 21   | (Ninth street)                                                                                         | 461.30                   |                 |                  |                   |                   |                            |                 | 941.77   |
| 23   | Ninth street, between F and G NW (east side)                                                           | 839.02                   | 529.87          |                  |                   |                   |                            | 50              | 764.53   |
| 26   | Seventh street, from New York avenue to driveway leading into White Lot NW (east side)                 | 464.48                   |                 |                  |                   |                   |                            |                 | 425.12   |
| 37   | Reservation bounded by T and Seventeenth streets and New Hampshire avenue NW, (T street side)          | 173.64                   | 61.79           | 58               |                   |                   |                            |                 | 277.73   |
| 40   | New York avenue, between Tenth and Eleventh streets NW (south side)                                    | 139.75                   |                 |                  |                   |                   |                            |                 | 374.64   |
| 8976 | Pennsylvania avenue, between Fourth and Sixth streets SE (south side)                                  | 537.77                   | 167.98          | 327              |                   |                   |                            | 1.50            | 647.52   |
|      | Reservation bounded by Pennsylvania avenue, Louisiana avenue, Ninth street, and Little Ninth street NW | 544.24                   | 2.70            | 511.45           |                   |                   |                            |                 | 560.61   |
| 80   | Connecticut avenue, between M and Eighteenth streets (west side)                                       | 236.05                   | 156.20          |                  |                   |                   |                            | 7               | 374.05   |
|      | Material purchased                                                                                     |                          |                 |                  |                   |                   |                            |                 | 362.95   |
|      | Total                                                                                                  | 3,991.05                 | 918.54          | 896.45           |                   |                   |                            | 58.50           | 5,000.00 |

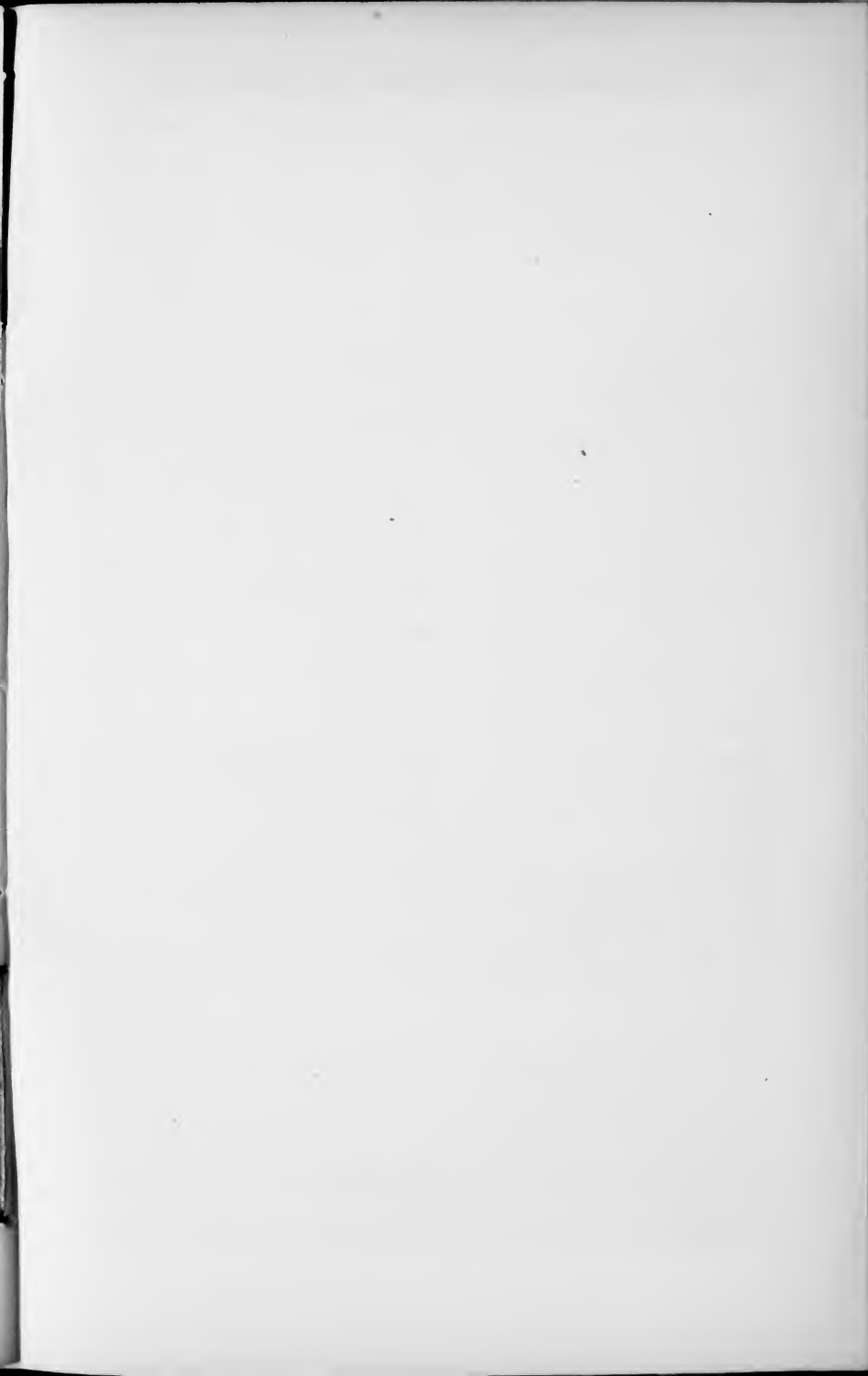


TABLE N.—*Mis*

| Number. | Location.                                                                                            | Appropriation.                                                           | Asphalt tile, repaved,<br>square yards. | Grading, cubic yards. |
|---------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------|-----------------------|
| 7001    | F street, between Third and Fourth NE.<br>(both sides).                                              | Improvements and repairs, north-<br>east section.                        | .....                                   | .....                 |
| 5       | Thirty-seventh street, between Back and<br>Tennallytown road.                                        | "Thirty-seventh street" .....                                            | .....                                   | .....                 |
| 9       | Sherman avenue .....                                                                                 | Constructing county roads .....                                          | .....                                   | .....                 |
| 22      | E street, between Thirteenth and Fif-<br>teenth SE, (both sides).                                    | Improvements and repairs, south-<br>east section.                        | .....                                   | 1,416.00              |
| 24      | Thomas circle and Fourteenth street<br>(northwest and southeast corners).                            | Repairs to concrete .....                                                | .....                                   | .....                 |
| 25      | Pennsylvania avenue and D, Seventh, and<br>Eighth streets SE.                                        | Repairs to school buildings and<br>grounds, 1897.                        | .....                                   | 60.00                 |
| 28      | Columbia road, between Eighteenth<br>street and Florida avenue.                                      | Columbia road, Eighteenth street to<br>Florida avenue.                   | .....                                   | 214.00                |
| 29      | F street, between Fourth and Ninth<br>NE, (both sides).                                              | Improvements and repairs, north-<br>east section.                        | .....                                   | .....                 |
| 30      | D street, between Sixth and Seventh SE.<br>(both sides).                                             | D street, between Sixth and Seventh<br>SE.                               | .....                                   | .....                 |
| 31      | Morris street, between Sixth and Seventh<br>NE, (both sides).                                        | Paving Morris street NE, between<br>Sixth and Seventh.                   | .....                                   | 196.00                |
| 32      | Eighth and M streets SE .....                                                                        | Repairs to concrete pavements .....                                      | .....                                   | .....                 |
| 33      | I street, between Ninth and Tenth NW.<br>(north side).                                               | do .....                                                                 | .....                                   | .....                 |
| 34      | Virginia avenue, between South Capitol<br>street and Delaware avenue SW.                             | Improvements and repairs, south-<br>west section.                        | .....                                   | 286.00                |
| 35      | Thirty-fifth street, at entrance to Mad-<br>ison street NW, (east side).                             | Repairs to concrete pavements .....                                      | .....                                   | 3.00                  |
| 36      | Virginia avenue, between South Capitol<br>street and Delaware avenue SW.                             | Improvements and repairs, south-<br>west section.                        | .....                                   | 286.00                |
| 38      | Le Droit Park, between Spruce and Elm,<br>Larch and Bohrer streets, block 15.                        | Spruce and Bohrer streets .....                                          | .....                                   | 42.00                 |
| 39      | Joliet street, from Connecticut avenue<br>extended to Zoological Park.                               | Joliet street, from Connecticut ave-<br>nue extended to Zoological Park. | .....                                   | .....                 |
| 42      | Judiciary Square (eastern side) .....                                                                | Repairs to concrete pavements .....                                      | .....                                   | .....                 |
| 43      | Tenth street, between East Capitol and<br>C NE, (both sides).                                        | Improvements and repairs, north-<br>east section.                        | .....                                   | 108.00                |
| 44      | N street, between Four-and-a-half and<br>Sixth SW, (both sides).                                     | Improvements and repairs, south-<br>west section.                        | .....                                   | 8.00                  |
| 45      | Clifton street, east of Thirteenth NW ...                                                            | Clifton, etc., streets, 1898. ....                                       | .....                                   | 363.00                |
| 46      | F street, between Ninth and Fourteenth<br>NW.                                                        | Repairs to concrete pavements .....                                      | 220                                     | .....                 |
| 53      | Park road and Zoological Park .....                                                                  | Kenesaw avenue and Park road .....                                       | .....                                   | .....                 |
| 54      | Twelfth street, between Emporia and<br>Frankfort streets, South Brookland.                           | Emporia street .....                                                     | .....                                   | .....                 |
| 55      | Second street and Pennsylvania avenue<br>SE, and alley, square 760.                                  | Repairs to concrete pavements .....                                      | .....                                   | .....                 |
| 56      | K street, between Sixteenth and Seven-<br>teenth NW.                                                 | do .....                                                                 | .....                                   | .....                 |
| 57      | Ninth and H streets NE, (southeast cor-<br>ner).                                                     | do .....                                                                 | .....                                   | .....                 |
| 60      | Pennsylvania avenue, between Eight-<br>eenth and Twenty-first streets NW,<br>(north side).           | do .....                                                                 | .....                                   | .....                 |
| 61      | Twenty-fifth street and Pennsylvania<br>avenue NW.                                                   | do .....                                                                 | .....                                   | .....                 |
| 74      | Emporia street, between Twelfth and<br>Thirteenth.                                                   | Emporia street .....                                                     | .....                                   | 11.00                 |
| 75      | Fourteenth street and Pennsylvania ave-<br>nue NW, and Ninth street and Penn-<br>sylvania avenue NW. | Repairs to concrete pavements .....                                      | .....                                   | .....                 |
| 76      | Canal road, between Thirty-sixth street<br>and Foxhall road.                                         | Emergency fund. ....                                                     | .....                                   | 79.00                 |
| 70      | Western Market, Twenty-first and K<br>streets NW.                                                    | Special repairs to market houses ..                                      | .....                                   | .....                 |
| 72      | Six-and-a-half street, between D and E<br>(both sides).                                              | Improvements and repairs, south-<br>west section.                        | .....                                   | .....                 |
| 73      | Engine house in Anacostia .....                                                                      | Anacostia engine house .....                                             | .....                                   | .....                 |
| 77      | Irving street, between Seventh street and<br>Sherman avenue.                                         | "Sherman avenue" .....                                                   | .....                                   | 63.00                 |
| 78      | Morris road .....                                                                                    | Suburban sewers .....                                                    | .....                                   | .....                 |
| 79      | Sherman avenue, from Grant street to<br>Irving street.                                               | "Sherman avenue" .....                                                   | .....                                   | 1,510.00              |

*cellaneous work.*

| Brick sidewalk, paved, square yards. | Brick sidewalk, repaved, square yards. | Cement sidewalk, square yards. | Curb set, linear feet. | Curb reset, linear feet. | Flag laid, linear feet. | Flag relaid, linear feet. | Cobble, square yards. | Asphalt block, paved, square yards. | Vitrified block, paved, square yards. | Concrete, cubic yards. | Vitrified brick, repaved, square yards. | Macadam replaced, square yards. | Brick on edge, repaved, square yards. | Granite block, repaved, square yards. | Gravel, square yards. | Cost.    |
|--------------------------------------|----------------------------------------|--------------------------------|------------------------|--------------------------|-------------------------|---------------------------|-----------------------|-------------------------------------|---------------------------------------|------------------------|-----------------------------------------|---------------------------------|---------------------------------------|---------------------------------------|-----------------------|----------|
| .....                                | 905                                    | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | \$184.82 |
| 3,189                                | .....                                  | .....                          | 105.00                 | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 822.36   |
| .....                                | .....                                  | 757.29                         | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 12.37    |
| .....                                | 760                                    | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 886.02   |
| 4,930                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 126.46   |
| 1,640                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | 27                    | .....                               | .....                                 | .....                  | 7                                       | .....                           | .....                                 | .....                                 | .....                 | 944.89   |
| 1,496                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 146.74   |
| 496                                  | .....                                  | .....                          | 74.40                  | 135                      | .....                   | .....                     | 140                   | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 892.52   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | 168                       | 74                    | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 243.42   |
| .....                                | .....                                  | .....                          | .....                  | 86                       | .....                   | 60                        | 23                    | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 297.55   |
| .....                                | 822                                    | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 1,261.49 |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 37.96    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 263.78   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 42.40    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | 44                                    | .....                 | 392.96   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 59.05    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 835.47   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 126.28   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 881.43   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 426.55   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 320.22   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 96.74    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 679.82   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 599.34   |
| .....                                | .....                                  | .....                          | 45.00                  | .....                    | .....                   | 60                        | 100                   | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 106.18   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 2.80     |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 11.17    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 853.17   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 69.26    |
| .....                                | .....                                  | 277.33                         | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 124.28   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 118.69   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 403.67   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 173.44   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 279.94   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 331.26   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 15.25    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 160.35   |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | 1,527.22 |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          | .....                  | .....                    | .....                   | .....                     | .....                 | .....                               | .....                                 | .....                  | .....                                   | .....                           | .....                                 | .....                                 | .....                 | .....    |
| .....                                | .....                                  | .....                          |                        |                          |                         |                           |                       |                                     |                                       |                        |                                         |                                 |                                       |                                       |                       |          |

TABLE N.—Miscella

| Number. | Location.                                                         | Appropriation.                                                                            | Asphalt tile, repaved,<br>square yards. | Grading, cubic yards. |
|---------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------|
| 81      | Eighth street, between D and E NW.<br>(front of engine house).    | Buildings, fire department (be-<br>tween Seventh and Twelfth and<br>C and F streets NW.). | .....                                   | 25.00                 |
| 2       | Fourth street, between K and L NE.<br>(both sides).               | Improvements and repairs, north-<br>east section, 1898.                                   | .....                                   | 138.00                |
| 85      | Eighteenth street and Columbia road<br>(southeast corner).        | Connecticut avenue and Columbia<br>road, 1898.                                            | .....                                   |                       |
| 86      | Fourth street, between K and L NE.<br>(both sides).               | Improvements and repairs, north-<br>east section.                                         | .....                                   | 67.00                 |
| 87      | Municipal disinfecting station, southeast.                        | Act to prevent spread of scarlet<br>fever, etc., 1898.                                    | .....                                   |                       |
| 88      | Grant avenue, between Seventh street<br>and Sherman avenue.       | "Sherman avenue" .....                                                                    | .....                                   |                       |
| 89      | Park road, from Sixteenth street to<br>Klingie Ford road.         | Kenesaw avenue and Park road .....                                                        | .....                                   |                       |
| 90      | Smallpox hospital.....                                            | Emergency fund.....                                                                       | .....                                   | 386.00                |
| 91      | M street, between Thirty-second and<br>Thirty-third (south side). | Improvements and repairs, George-<br>town.                                                | 15 .....                                |                       |
| 92      | Southeast corner Eighteenth street and<br>Columbia road.          | Connecticut avenue extended and<br>Columbia road.                                         | .....                                   | .90                   |
|         | Total.....                                                        | .....                                                                                     | 235                                     | 5,261.90              |

neous work—Continued.

|       | Brick sidewalk, paved,<br>square yards. | Brick sidewalk, repaved,<br>square yards. | Cement sidewalk, square<br>yards. | Curb set, linear feet. | Curb reset, linear feet. | Flag laid, linear feet. | Flag relaid, linear feet. | Cobble, square yards. | Asphalt block, paved,<br>square yards. | Vitrified block, paved,<br>square yards. | Concrete, cubic yards. | Vitrified brick, repaved,<br>square yards. | Macadam replaced,<br>square yards. | Brick on edge, repaved,<br>square yards. | Granite block, repaved,<br>square yards. | Gravel, square yards. | Cost.    |
|-------|-----------------------------------------|-------------------------------------------|-----------------------------------|------------------------|--------------------------|-------------------------|---------------------------|-----------------------|----------------------------------------|------------------------------------------|------------------------|--------------------------------------------|------------------------------------|------------------------------------------|------------------------------------------|-----------------------|----------|
| 1,079 | 3                                       |                                           |                                   |                        | 45                       |                         |                           |                       | 81                                     | 9.50                                     |                        |                                            |                                    |                                          | 5                                        |                       | \$205.93 |
|       |                                         |                                           |                                   | 822.00                 |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 331.94   |
|       |                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 7.40     |
|       |                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 691.40   |
|       |                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 104.20   |
|       |                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          | 4,500                 | 117.51   |
|       |                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 77.20    |
|       | 15                                      |                                           |                                   |                        |                          |                         |                           | 188                   | 77                                     |                                          |                        |                                            |                                    |                                          |                                          |                       | 397.82   |
|       |                                         | 19.17                                     | 21.40                             |                        |                          |                         |                           | 145                   |                                        |                                          |                        |                                            |                                    | 467                                      |                                          |                       | 25.70    |
|       |                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 38.38    |
| 4,268 | 19,342                                  | 1,053.79                                  | 1,187.80                          | 1,186                  | 65                       | 324                     | 1,317                     | 636                   | 33.33                                  | 9.50                                     | 7                      | 1,075                                      | 467                                | 49                                       | 4,500                                    | 16,754.80             |          |

TABLE N.—*Miscella*

| Number. | Location.                                                         | Appropriation.                                                                    | Asphalt tile, repaved,<br>square yards. | Grading, cubic yards. |
|---------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------|-----------------------|
| 81      | Eighth street, between D and E NW.<br>(front of engine house).    | Buildings, fire department (between Seventh and Twelfth and C and F streets NW.). | .....                                   | 25.00                 |
| 2       | Fourth street, between K and L NE.<br>(both sides).               | Improvements and repairs, north-east section, 1898.                               | .....                                   | 138.00                |
| 85      | Eighteenth street and Columbia road<br>(southeast corner).        | Connecticut avenue and Columbia road, 1898.                                       | .....                                   | .....                 |
| 86      | Fourth street, between K and L NE.<br>(both sides).               | Improvements and repairs, north-east section.                                     | .....                                   | 67.00                 |
| 87      | Municipal disinfecting station, southeast.                        | Act to prevent spread of scarlet fever, etc., 1898.                               | .....                                   | .....                 |
| 88      | Grant avenue, between Seventh street<br>and Sherman avenue.       | "Sherman avenue" .....                                                            | .....                                   | .....                 |
| 89      | Park road, from Sixteenth street to<br>Klingie Ford road.         | Kenesaw avenue and Park road .....                                                | .....                                   | .....                 |
| 90      | Smallpox hospital.....                                            | Emergency fund.....                                                               | .....                                   | 386.00                |
| 91      | M street, between Thirty-second and<br>Thirty-third (south side). | Improvements and repairs, Georgetown.                                             | 15 .....                                | .....                 |
| 92      | Southeast corner Eighteenth street and<br>Columbia road.          | Connecticut avenue extended and<br>Columbia road.                                 | .....                                   | .90                   |
|         | Total.....                                                        | .....                                                                             | 235                                     | 5,261.90              |



neous work—Continued.

| Brick sidewalk, paved,<br>square yards. | Brick sidewalk, repaved,<br>square yards. | Cement sidewalk, square<br>yards. | Curb set, linear feet. | Curb reset, linear feet. | Flag laid, linear feet. | Flag relaid, linear feet. | Cobble, square yardg. | Asphalt block, paved,<br>square yards. | Vitrified block, paved,<br>square yards. | Concrete, cubic yards. | Vitrified brick, repaved,<br>square yards. | Macadam replaced,<br>square yards. | Brick on edge, repaved,<br>square yards. | Granite block, repaved,<br>square yards. | Gravel, square yards. | Cost.     |
|-----------------------------------------|-------------------------------------------|-----------------------------------|------------------------|--------------------------|-------------------------|---------------------------|-----------------------|----------------------------------------|------------------------------------------|------------------------|--------------------------------------------|------------------------------------|------------------------------------------|------------------------------------------|-----------------------|-----------|
| 1,079                                   | 3                                         |                                   |                        | 45                       |                         |                           |                       | 81                                     |                                          | 9.50                   |                                            |                                    |                                          | 5                                        |                       | \$205.93  |
|                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 331.94    |
|                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 7.40      |
|                                         |                                           |                                   | 822.00                 |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 691.40    |
|                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 104.20    |
|                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          | 4,500                 | 117.51    |
|                                         |                                           |                                   |                        |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 77.20     |
|                                         | 15                                        |                                   |                        |                          |                         |                           | 188                   | 77                                     |                                          |                        |                                            |                                    | 467                                      |                                          |                       | 397.82    |
|                                         |                                           |                                   |                        |                          |                         |                           |                       | 145                                    |                                          |                        |                                            |                                    |                                          |                                          |                       | 25.70     |
|                                         |                                           | 19.17                             | 21.40                  |                          |                         |                           |                       |                                        |                                          |                        |                                            |                                    |                                          |                                          |                       | 38.38     |
| 4,268                                   | 19,342                                    | 1,053.79                          | 1,187.80               | 1,186                    | 65                      | 324                       | 1,317                 | 636                                    | 33.33                                    | 9.50                   | 7                                          | 1,075                              | 467                                      | 49                                       | 4,500                 | 16,754.80 |

TABLE O.—Whole-cost work.

| No.   | Location.                                                                                                 | For whom done.                         | Vitrified block paved,<br>square yards.* | Curb reset, linear feet. | Asphalt block paved,<br>square yards. | Asphalt block repaved,<br>square yards. | Graded, cubic yards. | Cement, square yards. | Brick sidewalk relaid,<br>square yards. | Vlt. brick roadway re-<br>laid, square yards. | Cobble relaid, square<br>yards. | Cost.    |
|-------|-----------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------|--------------------------|---------------------------------------|-----------------------------------------|----------------------|-----------------------|-----------------------------------------|-----------------------------------------------|---------------------------------|----------|
| 5001  | Fourth street, near corner of F street.                                                                   | Washington Brewing Co.                 | ....                                     | 12                       | 84                                    | 72                                      | ....                 | ....                  | ....                                    | ....                                          | ....                            | \$175.29 |
| 2     | Fifteenth and U streets (northeast corner).                                                               | C. A. Didden (nothing done).           | ....                                     | ....                     | ....                                  | ....                                    | ....                 | ....                  | ....                                    | ....                                          | ....                            | ....     |
| 3     | Alley in square 159                                                                                       | Fitch, Fox & Brown.                    | ....                                     | ....                     | 90                                    | ....                                    | 4                    | ....                  | ....                                    | ....                                          | ....                            | 158.26   |
| 4     | Twentieth street from north curb line to north building line Wyoming avenue.                              | George Truesdale (deposit returned).   | ....                                     | ....                     | ....                                  | ....                                    | ....                 | ....                  | ....                                    | ....                                          | ....                            | ....     |
| 5     | Eleventh and F streets (at southwest corner) NW.                                                          | W. B. Moses & Son (in cement cut 114). | ....                                     | ....                     | ....                                  | ....                                    | ....                 | ....                  | ....                                    | ....                                          | ....                            | ....     |
| 6     | Front of 2929 Fourteenth street NW.                                                                       | W. A. Miskell                          | ....                                     | 8.80                     | ....                                  | ....                                    | ....                 | ....                  | ....                                    | ....                                          | ....                            | 1.99     |
| 7     | Front of 509 and 511 H street NE.                                                                         | Gustave Hartig                         | ....                                     | ....                     | ....                                  | ....                                    | ....                 | 18.11                 | ....                                    | ....                                          | ....                            | 16.12    |
| 8     | Parking space front 1626 M street NW.                                                                     | J. Maury Dove                          | ....                                     | ....                     | ....                                  | ....                                    | ....                 | 46.96                 | ....                                    | ....                                          | ....                            | 41.79    |
| 9     | Parking, corner First street and Indiana avenue NW.                                                       | Metropolitan Railroad Co.              | ....                                     | ....                     | ....                                  | ....                                    | ....                 | 21.57                 | ....                                    | ....                                          | ....                            | 19.20    |
| 10    | Parking space on Third street side of premises, southwest corner Third street and Pennsylvania avenue NW. | Charles Mades                          | ....                                     | ....                     | ....                                  | ....                                    | ....                 | 86.01                 | ....                                    | ....                                          | ....                            | 78.74    |
| 11    | Kansas avenue, between Savannah and Trenton streets (east side.)                                          | C. J. Ubhoff                           | ....                                     | ....                     | ....                                  | ....                                    | 91                   | ....                  | ....                                    | ....                                          | ....                            | 31.85    |
| 12    | Sixteenth street, 14 Lafayette square NW.                                                                 | J. S. Larcombe                         | 60                                       | 65                       | ....                                  | ....                                    | ....                 | ....                  | 17                                      | 79                                            | 97                              | 171.54   |
| Total |                                                                                                           |                                        | 60                                       | 85.80                    | 174                                   | 72                                      | 95                   | 172.65                | 17                                      | 79                                            | 97                              | 694.78   |

TABLE P.—*Number of square yards and cost charged for repairs to cuts made by plumbers and others in streets, avenues, and alleys during the year ended June 30, 1898.*

|                                                                                                         | Number. | Square yards. | Cost (amount charged). |
|---------------------------------------------------------------------------------------------------------|---------|---------------|------------------------|
| Plumbers' cuts:                                                                                         |         |               |                        |
| Sheet asphalt .....                                                                                     | 314     | 943.37        | \$2,971.62             |
| Granite block .....                                                                                     | 132     | 648.65        | 875.68                 |
| Asphalt block .....                                                                                     | 127     | 441.80        | 596.43                 |
| Vitrified brick and block .....                                                                         | 105     | 366.21        | 494.38                 |
| Brick .....                                                                                             | 59      | 324.62        | 70.27                  |
| Cobble and rubble .....                                                                                 | 313     | 1,322.74      | 505.23                 |
| Macadam .....                                                                                           | 89      | 383.55        | 517.79                 |
| Granolithic .....                                                                                       | 58      | 320.028       | 720.06                 |
|                                                                                                         | 1177    | 4,760.968     | 6,841.46               |
| The following cuts have been repaired and charged to the various appropriations and deposits specified: |         |               |                        |
| Water department .....                                                                                  | 344     | 3,730.57      | 2,943.30               |
| Sewer department .....                                                                                  | 520     | 24,899.55     | 10,737.91              |
| Current repairs, streets, etc. ....                                                                     | 65      | 1,847.94      | 686.70                 |
| Street lighting .....                                                                                   | 24      | 63.84         | 113.96                 |
| Repairs to concrete pavements ..                                                                        | 4       | 273.63        | 488.43                 |
| Assessment and permit, streets ..                                                                       | 1       | 2.05          | 3.65                   |
| Repairs, county roads .....                                                                             | 1       | 3.20          | 5.71                   |
| Improvements and repairs, northwest section .....                                                       | 1       | 12.50         | 22.31                  |
| Improvements and repairs, northeast section .....                                                       | 1       | 17.54         | 31.31                  |
| Improvements and repairs, Georgetown .....                                                              | 1       | 32.64         | 58.26                  |
| Replacing sidewalks and curbs around public reservations .....                                          | 2       | 52.82         | 94.28                  |
| Clifton, etc., streets .....                                                                            | 1       | 17.00         | 30.34                  |
| Widening Tenth street .....                                                                             | 1       | 18.24         | 32.56                  |
| Connecticut avenue extended and Columbia road .....                                                     | 1       | 140.00        | 249.90                 |
| Miscellaneous appropriations .....                                                                      | 66      | 1,202.73      | 813.93                 |
| Deposit, Capital Traction Co .....                                                                      | 1       | 8.00          | 18.00                  |
| Deposit, Potomac Electric Power Co .....                                                                | 55      | 363.94        | 568.29                 |
| Deposit, United States Electric Light Co .....                                                          | 234     | 1,049.14      | 2,382.31               |
| Deposit, Washington Gaslight Co .....                                                                   | 192     | 840.32        | 1,908.21               |
|                                                                                                         | 2692    | 39,336.618    | 28,080.82              |

NOTE.—The above amounts do not include the cost of surface repairs to sheet-asphalt pavements beyond the limits of cuts. Such repairs, when necessary, were executed simultaneously with the cut repairs, and charged against the proper street appropriation.

The following is a comparison between the repairs made to plumbers' cuts during the year ended June 30, 1898, and the eight preceding years:

| Year.                                                                                 | Number. | Square yards. | Cost.      |
|---------------------------------------------------------------------------------------|---------|---------------|------------|
| 1889-90 .....                                                                         | 393     | 2,085.06      | \$3,712.06 |
| 1890-91 .....                                                                         | 852     | 3,899.61      | 6,488.02   |
| 1891-92 .....                                                                         | 980     | 5,220.50      | 6,994.58   |
| 1892-93 .....                                                                         | 2132    | 8,694.67      | 14,025.68  |
| 1893-94 .....                                                                         | 1583    | 9,233.25      | 15,272.72  |
| 1894-95 .....                                                                         | 1236    | 6,718.57      | 9,267.71   |
| 1895-96 .....                                                                         | 1305    | 11,941.03     | 14,156.18  |
| 1896-97 .....                                                                         | 1016    | 15,053.07     | 25,530.55  |
| 1897-98 (includes gas, electric lighting, and deposit jobs, as in former years) ..... | 1659    | 7,022.368     | 11,718.27  |

## REPORT OF SUPERINTENDENT OF ROADS.

WASHINGTON, July 20, 1898.

SIR: I have the honor to submit herewith report of operations of road department during fiscal year ended June 30, 1898.

*Expenditures, repairing county roads and suburban streets, fiscal year 1897-98.*

|                                                                                                                                                | Amount.    |                                                                                                    | Amount.    |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------|------------|
| CENTRAL SECTION.                                                                                                                               |            | CENTRAL SECTION—continued.                                                                         |            |
| Twelfth street, at Fort, NE .....                                                                                                              | \$6. 12    | Brentwood road .....                                                                               | \$2. 75    |
| Thirteenth street, between Milwaukee and Omaha .....                                                                                           | 37. 25     | Bladensburg road .....                                                                             | 2. 50      |
| Thirteenth street, corner Harvard .....                                                                                                        | 3. 75      | Brightwood avenue .....                                                                            | 13. 99     |
| Bunker Hill road and Tenth street .....                                                                                                        | 23. 38     | Columbia road and Nineteenth street .....                                                          | 1. 25      |
| Wilson street .....                                                                                                                            | 93. 75     | Capitol avenue .....                                                                               | 2. 12      |
| Fourth street NE .....                                                                                                                         | 30. 50     | Central avenue .....                                                                               | 2. 75      |
| Rosedale street .....                                                                                                                          | 274. 19    | Corcoran street .....                                                                              | 2. 13      |
| Fourteenth street NW, extended .....                                                                                                           | 274. 12    | Eleventh street, Brookland .....                                                                   | 2. 50      |
| Sixteenth street NW, extended .....                                                                                                            | 7. 62      | Elm street .....                                                                                   | 178. 50    |
| Bladensburg road .....                                                                                                                         | 1. 25      | Fourth street NE .....                                                                             | . 63       |
| Brightwood avenue .....                                                                                                                        | 2. 50      | Fourteenth street .....                                                                            | 1. 25      |
| Rock Creek Church road .....                                                                                                                   | 2. 50      | Fourteenth street and Military road .....                                                          | 1. 25      |
| Eighteenth street NW, extended .....                                                                                                           | 32. 80     | Hartford street .....                                                                              | 4. 87      |
| Linnean Hill road .....                                                                                                                        | 1. 25      | Howard avenue .....                                                                                | 11. 27     |
| Sixth street NW .....                                                                                                                          | 45. 87     | Lincoln avenue .....                                                                               | 11. 50     |
| Providence street .....                                                                                                                        | 28. 25     | Do .....                                                                                           | 1. 25      |
| Montgomery street .....                                                                                                                        | 47. 37     | Lansing street, Brookland .....                                                                    | 5. 50      |
| Bunker Hill road .....                                                                                                                         | 355. 62    | Linnean Hill road .....                                                                            | 2. 50      |
| Tenth street, Brookland .....                                                                                                                  | 2. 50      | Mintwood place .....                                                                               | 7. 75      |
| V street NE .....                                                                                                                              | 19. 63     | Ninth street, Brookland .....                                                                      | 4. 25      |
| Eighteenth street from Lowell street to Howard avenue, and Howard avenue between Eighteenth and Nineteenth streets .....                       | 302. 30    | Providence street .....                                                                            | 3. 50      |
| Sheridan street, between Sixth and Seventh .....                                                                                               | 335. 56    | Queen's Chapel road .....                                                                          | 16. 56     |
| Elm street, between Harewood and Le Droit avenues .....                                                                                        | 120. 13    | Rosedale street .....                                                                              | 180. 63    |
| Lydecker avenue, between Thirteenth street and Holmead avenue .....                                                                            | 243. 50    | Rock Creek Church road .....                                                                       | 3. 75      |
| Bladensburg road .....                                                                                                                         | 1, 631. 97 | Richmond street, Petworth subdivision .....                                                        | 39. 50     |
| R street NW, between Twenty-first and Twenty-second .....                                                                                      | 547. 87    | Spring road NW .....                                                                               | 1. 25      |
| Twenty-fourth street between U street and California avenue, and California avenue between Massachusetts avenue and Twenty-fourth street ..... | 74. 50     | Sherman avenue .....                                                                               | 8. 00      |
| Northeast corner Erie and Messmore streets .....                                                                                               | 24. 00     | Shepherd road .....                                                                                | 5. 50      |
| Blair road, in vicinity of Woodburn .....                                                                                                      | 75. 25     | Twelfth street, Brookland .....                                                                    | 6. 12      |
| Riggs road, in vicinity of Woodburn .....                                                                                                      | 154. 72    | Thirteenth street, Brookland .....                                                                 | 37. 25     |
| T street NW, between First street and Le Droit avenue .....                                                                                    | 306. 63    | Do .....                                                                                           | 10. 62     |
| Pine street, between Park and Grant streets, Mount Pleasant .....                                                                              | 13. 50     | V street NE .....                                                                                  | 14. 75     |
| Park street, between Fourteenth and Sixteenth .....                                                                                            | 13. 00     | Wilson street .....                                                                                | 264. 88    |
| Fort street, just east of Twelfth, Brookland .....                                                                                             | 2. 75      | Frankfort, between Twelfth and Fourteenth streets, Brookland .....                                 | 305. 90    |
| Howard avenue, Mount Pleasant .....                                                                                                            | 60. 00     | Brentwood road .....                                                                               | 93. 06     |
| Lydecker avenue, Holmead subdivision .....                                                                                                     | 26. 00     | Queen's Chapel road, from Bladensburg road to District line .....                                  | 217. 37    |
| Holmead avenue, Holmead subdivision .....                                                                                                      | 27. 25     | Eight and Ninth streets, from Florida avenue to Grant street .....                                 | 20. 75     |
| Lamar street, Holmead subdivision .....                                                                                                        | 6. 50      | Whitney avenue, from Thirteenth street to Brightwood avenue .....                                  | 478. 12    |
| Thirteenth street, Holmead subdivision .....                                                                                                   | 45. 25     | Carroll avenue and other streets in Takoma Park .....                                              | 453. 40    |
| Chestnut and Magnolia avenues .....                                                                                                            | 6. 74      | Rock Creek Church road, from Brightwood road to Harewood road .....                                | 265. 50    |
| Omaha street, between Twelfth and Thirteenth .....                                                                                             | 29. 00     | Eighteenth and Lowell streets, Ingle side .....                                                    | 563. 69    |
| Twenty-sixth, Twenty-eighth, Thirtieth, K, L, and Lawrence streets, Morris subdivision .....                                                   | 7. 06      | Brightwood avenue, between Rock Creek Church road and District line .....                          | 16. 50     |
| Sheridan street, east of Brightwood avenue .....                                                                                               | 48. 87     | Sargent road, between Bunker Hill road and District line .....                                     | 1, 733. 25 |
| Milwaukee avenue, between Eleventh and Twelfth streets, Brookland .....                                                                        | 5. 75      | Oak street, between Harewood avenue and Linden street .....                                        | 297. 49    |
| Brightwood avenue .....                                                                                                                        | 83. 29     | Juniper street, from Florida avenue to Spruce street .....                                         | 269. 51    |
| Fourteenth street, between Dover and Frankfort, Brookland .....                                                                                | 37. 00     | Wallace street, Brookland, between Hartford and Frankfort .....                                    | 151. 38    |
| Bunker Hill road, between Baltimore and Ohio Railroad and District line .....                                                                  | 181. 75    | Trumbull street (east end), Howard University subdivision .....                                    | 35. 63     |
| Bunker Hill road .....                                                                                                                         | 34. 56     | Whitney avenue, between Thirteenth and Fourteenth streets .....                                    | 42. 50     |
| Argyle Mill road .....                                                                                                                         | 2. 75      | Levis street, from Bladensburg road to Trinidad avenue .....                                       | 317. 50    |
|                                                                                                                                                |            | Sixteenth street extended, between Kenesaw avenue and Park street .....                            | 191. 88    |
|                                                                                                                                                |            | Howard street between Sixth and Seventh, and Sixth street between Howard and Lincoln avenues ..... | 22. 71     |
|                                                                                                                                                |            | Bunker Hill road, beyond Queen's Chapel road .....                                                 | 310. 08    |
|                                                                                                                                                |            | Grant road, along east side Florida avenue .....                                                   | 163. 24    |
|                                                                                                                                                |            |                                                                                                    | 83. 56     |
|                                                                                                                                                |            |                                                                                                    | 20. 80     |

Expenditures, requiring county roads and suburban streets, fiscal year 1897-98—Cont'd.

|                                                                                        | Amount.   |                                                                                         | Amount.  |
|----------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------|----------|
| CENTRAL SECTION—continued.                                                             |           | WESTERN SECTION—continued.                                                              |          |
| Columbia road, east of Eighteenth street.....                                          | \$78.81   | Brookville road, from Tennallytown road to District line.....                           | \$362.94 |
| Brightwood avenue, at north side of Sheridan street.....                               | 9.75      | Loughboro road.....                                                                     | 538.00   |
| Brightwood avenue, at Whitney avenue.....                                              | 15.15     | Woodley road, from Connecticut avenue to Tennallytown road.....                         | 653.25   |
| Sixteenth street, at Rosedale.....                                                     | 7.37      | Grant road, from Broad Branch road to Tennallytown road.....                            | 181.00   |
| Streets in Ingleside.....                                                              | 5.00      | Erie street, between Central and Champlain avenues.....                                 | 33.75    |
| Brightwood avenue, north of Steuben street.....                                        | 258.40    | Foxhall road, between Canal and Conduit roads.....                                      | 197.93   |
| Eln street, between Fourth and Fifth V street NW, between First and North Capitol..... | 41.67     | Road from Chevy Chase circle to Broad Branch road.....                                  | 269.37   |
| V street NE, between Third and Fourth.....                                             | 3.19      | California avenue, between Twenty-fourth street and Massachusetts avenue southward..... | 182.36   |
| Rock Creek road.....                                                                   | 196.75    | Prospect street (Reno).....                                                             | 320.87   |
| Seventh street road.....                                                               | 59.56     | Forty first street.....                                                                 | 22.50    |
| Queen's Chapel road.....                                                               | 18.47     | Wisconsin avenue, from Nebraska avenue southward.....                                   | 74.94    |
| Bladensburg road.....                                                                  | 44.50     | Southern approach to Chain Bridge.....                                                  | 37.75    |
| Queen's Chapel road, from Bunker Hill road to District line.....                       | 34.25     | Nineteenth street, between Wyoming avenue and Columbia road.....                        | 18.88    |
| School and Pine streets, Mount Pleasant.....                                           | 151.06    | Canal road.....                                                                         | 93.25    |
| Queen's Chapel road.....                                                               | 73.75     | Q street, between Twenty-second and Twenty-third NW.....                                | 9.00     |
| Streets in Langdon.....                                                                | 31.50     | Canal road.....                                                                         | 14.84    |
| Dangerous holes and minor repairs.....                                                 | 4,259.54  | Wisconsin avenue, at north side Woodley Lane road.....                                  | 44.05    |
|                                                                                        | 18,007.50 | Tunlaw road.....                                                                        | 157.69   |
| WESTERN SECTION.                                                                       |           | Dangerous holes and minor repairs.....                                                  | 2,019.48 |
| Road from Broad Branch road to Chevy Chase circle.....                                 | 9.00      |                                                                                         | 9,687.03 |
| Military road.....                                                                     | 482.60    | EASTERN SECTION.                                                                        |          |
| Connecticut avenue.....                                                                | 57.00     | Nichols avenue.....                                                                     | 688.25   |
| Woodley lane.....                                                                      | 2.50      | Branch avenue.....                                                                      | 85.86    |
| Tennallytown road.....                                                                 | 2.50      | Jackson street.....                                                                     | 6.50     |
| New Cut road.....                                                                      | 10.50     | Bliss avenue.....                                                                       | 152.99   |
| Ridge road.....                                                                        | 1.25      | Pennsylvania avenue extended.....                                                       | 12.00    |
| Broad Branch road.....                                                                 | 1.25      | Minnesota avenue.....                                                                   | 20.25    |
| Pierce Mill road.....                                                                  | 1.25      | Howard avenue.....                                                                      | 5.50     |
| Loughboro road.....                                                                    | 1.25      | Good Hope road.....                                                                     | 46.00    |
| Thirty-seventh street, between U and W.....                                            | 153.25    | Wheeler road.....                                                                       | 5.25     |
| Tennallytown road.....                                                                 | 828.88    | Sheridan and Nichols avenues.....                                                       | 7.50     |
| Thirty-fourth and Newark, and streets in Cleveland Park.....                           | 76.50     | Branch avenue, near Bowen road.....                                                     | 301.43   |
| Road from Broad Branch road to Chevy Chase circle.....                                 | 431.37    | Nichols avenue, between Stickfoot Branch and Insane Asylum gate.....                    | 101.00   |
| Grant road, from Wisconsin avenue 1,100 feet eastward.....                             | 111.00    | Southeast corner Jackson and Adams streets, Anacostia.....                              | 7.50     |
| Do.....                                                                                | 198.44    | Branch avenue, between Bowen road and Pennsylvania avenue.....                          | 17.25    |
| Canal road, west of Thirty-sixth street.....                                           | 25.00     | Giesboro road, between Hamilton road and District line.....                             | 32.25    |
| Rock Creek Ford road.....                                                              | 103.00    | Livingston road.....                                                                    | 60.75    |
| Des Moines, from Forty-first street to Tennallytown road.....                          | 361.44    | Hamilton road.....                                                                      | 148.75   |
| Connecticut avenue and Grant road.....                                                 | 6.75      | Hillsdale, streets in.....                                                              | 124.13   |
| Military road, near Brightwood.....                                                    | 205.50    | Wheeler road.....                                                                       | 165.00   |
| Pierce Mill road, from Broad Branch road to Tennallytown road.....                     | 371.37    | Minnesota avenue, between Harrison street and Pennsylvania avenue.....                  | 70.50    |
| Broad Branch road.....                                                                 | 2.50      | Suit road, between Bowen road and District line.....                                    | 224.87   |
| Canal road.....                                                                        | 6.25      | Giesboro road.....                                                                      | 78.25    |
| Connecticut avenue.....                                                                | 15.68     | Monroe street.....                                                                      | 7.00     |
| Do.....                                                                                | 122.24    | Nichols avenue.....                                                                     | 1.25     |
| Des Moines street.....                                                                 | 17.75     | Sheriff road.....                                                                       | 417.12   |
| Erie street.....                                                                       | 49.56     | Nichols avenue, from Stanton street.....                                                | 2.75     |
| Loughboro road.....                                                                    | 1.25      | Bennings road, from Eastern Branch to District line.....                                | 93.09    |
| Military road.....                                                                     | 339.63    | Lincoln and Burkeville.....                                                             | 264.75   |
| New Cut road.....                                                                      | 1.25      | Walker and Naylor roads.....                                                            | 162.00   |
| Pierce Mill road.....                                                                  | 1.25      | Nichols avenue.....                                                                     | 172.50   |
| Road from Broad Branch road to Chevy Chase circle.....                                 | 84.00     | Good Hope road.....                                                                     | 50.00    |
| Ridge road NW.....                                                                     | 1.25      | Nichols avenue, from Asylum to Hamilton road.....                                       | 65.25    |
| Tennallytown road.....                                                                 | 39.25     | Monroe street, from Baltimore and Ohio Railroad to Harrison street.....                 | 468.82   |
| Tunlaw road.....                                                                       | 1.25      | High View avenue, Anacostia.....                                                        | 51.50    |
| Woodley lane.....                                                                      | 1.25      | Bennings road, from H street to bridge.....                                             | 65.75    |
| Albemarle street.....                                                                  | 267.72    | Dangerous holes and minor repairs.....                                                  | 90.12    |
| Connecticut avenue, south of Klinge road bridge.....                                   | 16.00     |                                                                                         | 2,143.58 |
| Massachusetts avenue extended (Kalorama).....                                          | 43.00     |                                                                                         | 6,609.18 |
| Foxhall road, between Conduit and Canal roads.....                                     | 2.50      |                                                                                         |          |

## SUMMARY.

|                                                    |                  |
|----------------------------------------------------|------------------|
| Central section .....                              | \$18,007.50      |
| Western section .....                              | 9,687.03         |
| Eastern section .....                              | 6,669.18         |
| Fuel .....                                         | 52.23            |
| Tools .....                                        | 215.73           |
| Blacksmithing .....                                | 435.33           |
| Hire of teams for chain gang .....                 | 497.00           |
| Hire of horse and buggy .....                      | 313.00           |
| Purchase of steam roller .....                     | 1,000.00         |
| Repairing steam roller .....                       | 1.73             |
| Salaries, property office .....                    | 48.00            |
| Salaries, surface division .....                   | 1,320.00         |
| Rolling, sprinkling, and miscellaneous labor ..... | 1,752.53         |
| <b>Total .....</b>                                 | <b>39,999.26</b> |

Under appropriation for "Current repairs, county roads, etc., 1898," the principal roads and streets repaired were as follows: On Nichols avenue, grading, graveling, and paving gutters; Bladensburg road, graveling and general repairs; R street NW., between Twenty-first and Twenty-second streets, grading, graveling, and laying gutter; Tennallytown road, graveling; new road between Chevy Chase Circle and Broad Branch road, grading, graveling, and relaying gutter; T street NW., between First street and Le Droit avenue, grading, graveling, and paving gutters; Des Moines, from Forty-first street to Tennallytown road, graveling and guttering; Pierce Mill road, from Broad Branch road to Tennallytown road, graveling; Brookville road, from Tennallytown road to District line, graveling; Loughboro road, graveling; Woodley road, from Connecticut avenue to Tennallytown road, graveling; Eighth and Ninth streets, from Florida avenue to Grant street, graveling; Whitney avenue, from Thirteenth street to Brightwood avenue, graveling and cleaning gutters; Rock Creek Church road, from Brightwood road to Harewood road, graveling; Brightwood avenue, between Rock Creek Church road and District line, graveling.

GEO. N. BEALE,  
*Superintendent of Roads.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A., Engineer Commissioner, District of Columbia.*  
(Through the Computing Engineer.)

## REPORT OF THE ENGINEER OF BRIDGES.

WASHINGTON, D. C., *July 1, 1898.*

CAPTAIN: I have the honor to submit the following report for the fiscal year ending June 30, 1898:

The following expenditures have been made under the appropriation for "Ordinary care of bridges:"

|                                     |                 |
|-------------------------------------|-----------------|
| Appropriation .....                 | \$3,500.00      |
| Salaries, bridge keepers, etc ..... | \$3,216.72      |
| Painting bridge No. 34 .....        | 195.79          |
| Coal and stove grate .....          | 23.25           |
| Chairs and brooms .....             | 4.24            |
| Bicycle for foreman .....           | 60.00           |
|                                     | <b>3,500.00</b> |

Bridge keepers have been maintained at the Pennsylvania avenue, Anacostia, and Aqueduct bridges, the importance and continually increasing travel over these much-used thoroughfares requiring careful and constant attention for cleaning and keeping the surface in proper condition and for enforcing needful rules in regard to travel.

## CONSTRUCTION AND REPAIR OF BRIDGES.

Under this appropriation but little more can be done than to keep the present structures in fair condition. In the way of repair the principal item of expense was a new floor on the Anacostia bridge, a portion of the lumber for which was purchased from the appropriation for 1897. A new floor was also laid between the tracks and rails on bridge No. 30, crossing Rock Creek on the line of Connecticut avenue.

The plank sidewalk on the south approach to the Pennsylvania avenue bridge, which had become badly worn and decayed, was replaced by a cement sidewalk.

The ironwork of the Chain Bridge (No. 1), the Woodley Lane Bridge (No. 31), and the bridge across Rock Creek near Massachusetts avenue (No. 32) was thoroughly painted, and is now in good condition.

Bridges 15, 16, 18, and 48 were replaced by masonry culverts, and bridges 28 and 29 by cast-iron 36-inch pipe. This was done in pursuance of the policy of substituting, wherever practicable, a durable and permanent structure of masonry or iron for perishable wood. A new masonry culvert was built over Broad Branch at the junction of Broad Branch road and the portion of the Military road leading southwest toward Tennallytown.

The bridge on the Argyle Mill road, known as No. 14, which was a wooden structure of two spans about 50 feet each, had become much decayed and weakened, and contract was made for steel-plate girders. The structure has been delivered and also the material for the floor. The work of erecting the bridge will be done after July.

The contract for widening the P Street Bridge, under the special appropriation for that purpose, was awarded to J. C. McGuire, and is well under way. It will be completed early in the coming year. When complete, it will give a continuous roadway of 40 feet, the same as on P street, and ample sidewalks, and, while greatly improving the appearance of the bridge, will prove a great relief to the traveling public.

The recommendations of past years in regard to the reconstruction of the K and M Street bridges across Rock Creek, and the Anacostia or Navy-Yard Bridge across the Eastern Branch, are again repeated. The need of a more substantial structure for the last-named bridge especially is emphasized and made more apparent by the increased strain to which it is subject in the use of the heavy motor cars of the Capital Railway. The bridge is old and was not originally designed for such service.

In recognition of the need of increased facilities for communication between the city and suburban districts, Congress, by the act approved March 3, 1897, provided for the preparation by the Chief of Engineers of the United States Army of plans for a stone arch, and also for a steel bridge over Rock Creek on the line of Massachusetts avenue extended, and, by the same act, the Commissioners of the District were authorized to secure by competition, designs for a bridge or viaduct across Rock Creek on the line of Connecticut avenue extended. In pursuance of this act plans for the Massachusetts Avenue Bridge were prepared by the Chief of Engineers, and, after the receipt of competitive designs by the Commissioners for the Connecticut Avenue Bridge, the design of George S. Morison was recommended for adoption. The result having been reported to Congress by the Secretary of War in House document 163, Fifty-fifth Congress, second session, and by the Commissioners in Senate document 96, Fifty-fifth Congress, second session, provision was made by the act approved June 30, 1898, for the commencement of these structures by the appropriation of \$25,000 in each case toward the construction of foundations.

*Expenditures construction and repair of bridges, 1898.*

| Order.     | Bridge.   | Character of work.                                                     | Cost.      |
|------------|-----------|------------------------------------------------------------------------|------------|
| 6001       | -----     | Culvert on Michigan avenue, lay cast-iron pipe <i>a</i> .....          | \$172. 37  |
| 6002       | 55        | Lay new floor <i>b</i> .....                                           | 2, 160. 37 |
| 6003       | 31        | Paint ironwork .....                                                   | 539. 40    |
| 6004       | 32        | Paint and repair floor .....                                           | 275. 75    |
| 6005       | -----     | Various bridges, repairs, September 1 to 15 .....                      | 34. 05     |
| 6006       | 54        | Repairs to sidewalk .....                                              | 28. 00     |
| 6007       | 77        | Repair floor .....                                                     | 17. 00     |
| 6008       | 35        | Repair sidewalk .....                                                  | 2. 75      |
| 6009       | -----     | Culvert on Branch avenue, repair .....                                 | 6. 56      |
| 6010       | -----     | Frames for signboards .....                                            | 2. 25      |
| 6011       | 55        | Repair floor .....                                                     | 44. 71     |
| 6012       | 26        | do .....                                                               | 82. 91     |
| 6013       | 18        | do .....                                                               | 14. 75     |
| 6014       | 78        | do .....                                                               | 37. 06     |
| 6015       | 34        | do .....                                                               | 2. 25      |
| 6016       | -----     | Various bridges, repairs, September 16 to 30 .....                     | 7. 38      |
| 6017       | -----     | Various bridges, repairs, October 1 to 15 .....                        | 19. 74     |
| 6018       | -----     | Various bridges, repairs, October 16 to 31 .....                       | 29. 57     |
| 6019       | 30        | Relay floor between tracks and rails .....                             | 982. 53    |
| 6020       | 27        | Repair floor .....                                                     | 56. 34     |
| 6021       | 55        | Put additional weight on draw .....                                    | 124. 69    |
| 6022       | 55        | Lay new sidewalk .....                                                 | 988. 43    |
| 6023       | 24        | Repair floor .....                                                     | 57. 23     |
| 6024-6032  | -----     | Various bridges, repairs, November 1, 1897, to February 16, 1898 ..... | 116. 25    |
| 6033, 6034 | -----     | Various bridges, cleaning and repairing, March 1 to 15 .....           | 55. 25     |
| 6035       | 35        | Paint .....                                                            | 117. 20    |
| 6036       | 35        | Lay new floor in roadway .....                                         | 786. 57    |
| 6037       | 28 and 29 | Change to 36-inch pipe culverts .....                                  | 249. 27    |

*Expenditures construction and repair of bridges, 1898—Continued*

| Order.     | Bridge.   | Character of work.                                                | Cost.     |
|------------|-----------|-------------------------------------------------------------------|-----------|
| 6038       |           | Various bridges, repairs, March 16 to 31                          | \$1.37    |
| 6039       | 48        | Replace with masonry arch                                         | 343.37    |
| 6040       | 1         | Paint                                                             | 880.35    |
| 6041       | 14        | Replace with steel plate girder                                   | 1,020.04  |
| 6042       |           | Culvert on Bliss avenue, relay with 24-inch pipe                  | 338.90    |
| 6044       |           | Culvert on Rock Creek Church road, grating and basin              | 63.88     |
| 6045       | 18        | Replace with masonry arch                                         | 443.18    |
| 6046       | 16        | do                                                                | 631.72    |
| 6047       |           | Intersection of Broad Branch and Military roads, masonry culvert. | 480.48    |
| 6048       |           | Various bridges, repairs, April 16 to 30                          | 11.13     |
| 6049       | 15        | Replace with masonry arch                                         | 753.16    |
| 6052       |           | Branch avenue, repair culvert                                     | 25.25     |
| 6053       |           | Culvert, Harrison avenue, repair                                  | 30.81     |
| 6054       | 54        | Lay cement sidewalk in place of plank                             | 532.70    |
| 6055, 6056 |           | Various bridges, repairs, June 1 to 15                            | 1.50      |
| 6058       | 14        | Labor on plate girder bridge                                      | 35.50     |
|            | 7         | Lumber for repairs of floor                                       | 42.93     |
|            | 55 and 34 | Paint purchased for work in progress                              | 454.25    |
|            | 35        | Lumber for sidewalk                                               | 110.85    |
|            |           | Salaries                                                          | 1,620.00  |
|            |           | Tools purchased and repaired                                      | 84.25     |
|            |           | Brick and cement purchased on hand                                | 62.90     |
|            |           | Total                                                             | 14,979.13 |
|            |           | Balance of appropriation                                          | 21.87     |
|            |           | Grand total                                                       | 15,000.00 |

a Pipe purchased, 1897.

b Lumber partially purchased in 1897.

c Material.

Respectfully submitted,

GEO. H. BAILEY,  
*Engineer of Bridges.*Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A., Engineer Commissioner, District of Columbia.*  
(Through the Computing Engineer.)

## REPORT OF THE SUPERINTENDENT OF SEWERS.

WASHINGTON, D. C., August 19, 1898.

CAPTAIN: I have the honor to submit the following report of the operations of the sewer division for the fiscal year 1897-98.

Under the appropriation for cleaning and repairing sewers and basins, work was performed as follows: 116,804 linear feet of pipe sewers, 8,898 linear feet of brick sewers, 6,845 manholes; 95,551 receiving basins were cleaned, from which were removed 7,783 cubic yards (estimated) of street detritus and sludge; 3,640 feet of pipe sewers were taken up and relaid; 1,898 linear feet of brick sewers were repaired; 6 receiving basins were constructed; 55 receiving basins were reconstructed; 220 receiving basins were repaired; 32 tops (artificial and bluestone) were replaced; 96 basin covers (cast iron) were replaced; 8 receiving basins were abandoned; 94 receiving-basin outlets were cleaned; 12 manholes were constructed; 23 manholes were reconstructed; 116 manholes were adjusted to grade; 198 manholes were repaired; 48 manhole frames and covers were replaced; 163 manhole covers were replaced; 5 alley drops were constructed, and 33 alley grates and frames were replaced. Total number of jobs, 1,388; of minor repairs, 538.

The flushing gates at the outlet end of the Tiber sewer were advantageously operated throughout the year.

The tidal sewers and sediment chambers were cleaned with regularity. One flushing gang was employed throughout the year.

The reconstruction of the main sewer in Sixth street SE. between K and N streets was completed. Seven hundred and forty five feet of the invert of Slash Run sewer and 125 feet of the invert of North Capitol street sewer were reconstructed with ennettes for dry-weather flow. The amount expended for cleaning catch basins was \$12,018.33.

Under the appropriation for replacing obstructed sewers there were constructed, under contract, 2,306.70 linear feet of 12-inch sewer, from appropriation 1897, and 617 linear feet of 18-inch sewer from appropriation 1898, and by day labor 9,034



linear feet of pipe sewer, varying from 6 to 24 inches in diameter, 579 linear feet of lateral connections, 42 manholes, and 1 basin.

Under the appropriation for permit work there were constructed, by contract and day labor, 6,183 feet of pipe sewers, varying from 8 to 12 inches in diameter, and 25 manholes, divided among 24 jobs, averaging in cost per job \$261.21; in length of sewer per job, 257.6 linear feet; in cost per linear foot, \$1.015.

Under the assessment system there were constructed by day labor 19,942 linear feet of pipe sewers, varying in diameter from 6 to 12 inches, 120 manholes, and 11 receiving basins, divided among 78 jobs, averaging in cost per job \$344.34; in length of sewer per job, 255.2; and in cost per linear foot, \$1.44.

Sewers were constructed at applicants' cost, aggregating 707 linear feet, varying from 8 to 15 inches in diameter, and 10 manholes, divided among 8 jobs, averaging in cost per job \$122.15.

Under the appropriation for main and pipe sewers main sewers were constructed under contracts, in L street NW., between North Capitol and First streets, in Four-and-a-half street SW., between E and School streets; and the main sewer in O street, Georgetown, was extended eastward to Rock Creek. Under the appropriation for 1897, 9,572 linear feet of pipe sewers, varying from 12 to 24 inches in diameter, and under the appropriation for 1898, 581.1 linear feet of sewer, 24 inches in diameter, were constructed. By day labor there were constructed 17,296 linear feet of pipe sewers varying from 6 to 24 inches in diameter, 41.5 linear feet of 3-foot diameter brick sewer, 122 manholes, and 90 receiving basins.

Under the appropriation for suburban sewers, main sewers were constructed in Lincoln avenue NE., between R and T streets; Meridian street, between Erie and Huron streets; W street NW., between First and North Capitol streets; North Capitol street, between W and Detroit streets; Morris road, Anacostia, from Nichols avenue southward 500 feet. There were also constructed 11,110.26 linear feet of pipe sewers, varying from 12 to 24 inches in diameter, under appropriation for 1897, and 4,828.05 linear feet of pipe sewers 15 to 24 inches in diameter under appropriation for 1898. By day labor there were constructed 7,610 linear feet of pipe sewers, varying from 6 to 24 inches in diameter, 36 linear feet of cast-iron pipe sewer 24 inches in diameter, 76 linear feet of 3.75 by 5.625 foot diameter brick sewer, and 46 manholes.

The trunk sewer in the valley of Piney Branch, work on which was commenced in the fiscal year 1897, was completed to a point in Brandywine street a short distance east of Seventh street. A large amount of rock excavation was required in the various sections of this work.

The following work was performed for the surface division and charged to the various appropriations for the improvement and repair of streets and roads: 1,017 linear feet of pipe sewer were constructed, varying from 8 to 24 inches in diameter; 2 manholes were constructed, and 78 receiving basins were constructed, reconstructed, or abandoned.

Under the appropriation for automatic siphons, 7 flushing basins were constructed and 1 basin was repaired.

Contract No. 2220, with John Jacoby, for constructing a portion of the upper section of the Rock Creek and B street intercepting sewer from the intersection of P street with Florida avenue to the intersection of Twenty-fifth and Water streets was completed, and the sewer is now in service. In constructing this sewer across M street, the large water main in that street, which rested upon filled ground of poor character, was supported by steel girders which spanned the sewer line. These were left in position after the completion of the sewer work. They are inclosed and accessible for painting and inspection.

The crossings of Slash Run and Boundary sewers required the reconstruction of the outlet ends of these sewers.

The intercepting sewer in Fifteenth and F streets was completed within the year. This work was performed with little actual discomfort to the public, the only event of note being the heavy rain storm of May 13, 1897, which caused caving of the side of the excavation where the section was enlarged at the junction with the Thirtieth street sewer. Travel on the electric railway was delayed several hours as a result.

Nine hundred and thirty-two feet of the Tiber Creek and New Jersey avenue high-level intercepting sewer were constructed under contract No. 2446, with J. K. Murphy, within the lines of Garfield Park.

The work performed to date upon the project for sewage disposal consists in the construction of the F street and Easby Point intercepting sewer, the upper portion of the Rock Creek and B street intercepting sewer, and 932 feet of the Tiber Creek and New Jersey avenue high-level intercepting sewer. The F street and Easby Point intercepting sewer diverts into the channel of the Potomac River all the drainage from the area north of its location and west of Seventh street which formerly discharged into the B street sewer system. The completed portion of the Rock Creek and B street intercepting sewer intercepts and diverts into the channel of the Potomac River the sewage which was formerly discharged into Rock Creek. Little

improvement in conditions of the drainage system would be effected by constructing any one of the remaining portions of the project; the completion of the project is required for any further appreciable benefit.

I respectfully invite attention to an absence of equity in the construction of service sewers. In consideration of the fact that the larger sewers are larger and more expensive because they are required to serve as outlets for smaller sewers, it has seemed unfair that they should be charged against the abutting property, and the practice of the office is to construct sewers of greater size than 12 inches in diameter from the appropriation for main and pipe sewers or the appropriation for suburban sewers. Sewers 12 inches in diameter and under are usually constructed under the assessment system, in which case one-half of the cost is taxed against the abutting property. According to this practice, property abutting upon sewers above 12 inches in diameter is not taxed on account of the sewer construction, although it receives as much benefit as property which is taxed for the construction of sewers under the assessment system. Again, under the assessment system, the owner of the corner lot is, in many instances, compelled to pay as much as five times the amount assessed against the adjacent lot of equal area, each receiving equal benefit. In my opinion all properties abutting upon a service sewer should pay a proportion of its cost, and assuming the average cost of 12-inch sewers as a foundation, \$7.50 for each 1,000 feet of lot area would place the charge upon a fair basis.

Aggregate length of sewer construction during the fiscal year 1897-98: Main sewers, 13,540.2 feet (2.564 miles); pipe sewers, 78,403.55 feet (14.849 miles); pipe sewers relaid, 9,462.6 feet (1.793 miles).

Total length of sewers in the District of Columbia: Main sewers, 443,109 feet (83.92 miles); pipe sewers, 1,578,215 feet (298.91 miles).

Tables numbered from 1 to 10 are transmitted herewith.

Table No. 1 shows sewers constructed under contract chargeable to sewer appropriations for the fiscal year 1898.

Table No. 2 shows sewers constructed under various contracts chargeable to sewer appropriations for fiscal years 1895, 1896, and 1897, completed in fiscal year 1898.

Table No. 3 shows work done by day labor under the permit system and at the whole cost of applicant.

Table No. 4 shows work done by day labor under the assessment system.

Table No. 5 shows work done by day labor under the appropriation for replacing obstructed sewers.

Table No. 6 shows work done by day labor under the appropriation for main and pipe sewers.

Table No. 7 shows work done by day labor under the appropriation for suburban sewers.

Table No. 8 shows work done under miscellaneous appropriations and appropriations for flushing basins.

Table No. 9 shows number of inspectors, overseers, and other employees of the sewer and property divisions, and engineer stables temporarily required, and appropriations from which paid.

Table No. 10 shows average cost per linear foot of sewers constructed by day labor.

Very respectfully, your obedient servant,

D. E. McCOMB,  
*Superintendent of Sewers.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner, District of Columbia.*



TABLE 1.—Statement of sewers constructed under contracts

| No. of contract. | Contractor.         | Location.                                                        | Size of sewer.            | Length.      | Contract price per foot. |
|------------------|---------------------|------------------------------------------------------------------|---------------------------|--------------|--------------------------|
|                  |                     |                                                                  |                           | <i>Feet.</i> |                          |
| 2515             | Andrew Gleeson..... | Sixth street SE., between K and L.                               | 6 feet 3 inches diameter. | 60           |                          |
|                  |                     |                                                                  | 4 feet 3 inches diameter. | 215.2        |                          |
| 2520             | E. G. Gummel.....   | E street SW., between Four- and-a-half and Sixth.                | 18-inch.....              | 617          | \$1.35                   |
|                  |                     |                                                                  | Manholes.....             | 5            | 25.00                    |
| 2520             | .....do.....        | L street NW., between North Capitol and First.                   | 2.5 by 3.75 feet.....     | 727.9        |                          |
|                  |                     |                                                                  | 2.25 by 3.75 feet.....    | 171.5        |                          |
| 2521             | John Jacoby.....    | M street NW., between Thirtieth and Thirty-first.                | 24-inch.....              | 581.1        | 1.90                     |
|                  |                     |                                                                  | Manholes.....             | 4            | 35.00                    |
| 2521             | .....do.....        | Q street NW., between Twenty-fifth and Twenty-sixth.             | 4 feet diameter.....      | 202.8        |                          |
|                  |                     |                                                                  | Manholes.....             | 1            |                          |
| 2522             | Adam McCandlish..   | Four-and-a-half street SW., between E and School.                | 2.75 by 4.125 feet.....   | 72.15        |                          |
|                  |                     |                                                                  | 2 by 3 feet.....          | 265.37       |                          |
| 2405             | .....do.....        | Valley of Piney Branch, between Fourteenth and Trenton streets.  | 24-inch.....              | 2,020.66     | 1.50                     |
|                  |                     |                                                                  | 21-inch.....              | 916.29       | 1.85                     |
|                  |                     |                                                                  | Manholes.....             | 7            | 25.00                    |
|                  |                     |                                                                  | Manholes.....             | 4            | 35.00                    |
| 2520             | E. G. Gummel.....   | Lincoln avenue NE., between R and T streets.                     | 2.25 by 3.375 feet.....   | 557.15       |                          |
| 2520             | .....do.....        | Meridian street, between Erie and Huron.                         | 2 by 3 feet.....          | 550.35       |                          |
|                  |                     |                                                                  | 2.75 by 4.125 feet.....   | 550.95       |                          |
| 2542             | R. M. Moore & Co... | Klinge road.....                                                 | 15-inch.....              | 1,891.1      | .59                      |
|                  |                     |                                                                  | Manholes.....             | 6            | 15.00                    |
| 2523             | Lyons Bros.....     | Morris road.....                                                 | 2.50 by 3.75 feet.....    | 135.35       |                          |
| 2446             | J. K. Murphy.....   | Tiber Creek and New Jersey avenue high-level intercepting sewer. | 2 by 3 feet.....          | 500.33       |                          |

chargeable to sewer appropriations for the fiscal year 1898.

| Allowance to contractor. | Materials furnished. |                 | Cost of inspection. | Cost of repairs to pavements. | Total cost. | Appropriation.                                                   |
|--------------------------|----------------------|-----------------|---------------------|-------------------------------|-------------|------------------------------------------------------------------|
|                          | Chargeable.          | Not chargeable. |                     |                               |             |                                                                  |
| \$2,727.29               | \$472.25             | \$1.44          | \$221.50            | .....                         | \$3,422.48  | Cleaning and repairing sewers and basins.                        |
| 848.04                   | 112.49               | 181.45          | 52.00               | \$155.92                      | 1,349.90    | Replacing obstructed sewers.                                     |
| 3,374.21                 | 1,247.40             | 38.94           | 327.50              | 210.95                        | 5,199.00    | Main and pipe sewers.                                            |
| 1,057.09                 | 126.00               | 324.79          | 120.50              | 131.27                        | a 1,759.65  | Do.                                                              |
| 1,847.87                 | 295.95               | 5.80            | 116.00              | .....                         | 2,265.62    | Do.                                                              |
| 1,089.08                 | 414.10               | 10.34           | 104.00              | 99.54                         | 1,727.06    | Do.                                                              |
| 16,087.78                | 697.90               | 1,390.14        | 1,030.00            | .....                         | b 19,205.82 | Suburban sewers.                                                 |
| 2,977.64                 | 1,381.30             | 18.70           | 224.00              | .....                         | 4,601.64    | Do.                                                              |
| 1,926.93                 | 814.17               | 9.35            | 152.00              | .....                         | 2,902.45    | Do.                                                              |
| 1,834.55                 | 187.55               | 346.59          | 68.00               | .....                         | 2,436.69    | Do.                                                              |
| 1,890.34                 | 829.78               | 16.64           | 356.00              | 276.49                        | 3,369.25    | Do.                                                              |
| 40,992.22                | .....                | .....           | 1,383.00            | .....                         | c 42,375.22 | Tiber Creek and New Jersey avenue high-level intercepting sewer. |

a Includes \$8 for inspection, deducted from amount due contractor.

b Includes \$24 for inspection, deducted from amount due contractor.

c Work incomplete; payment made on account.

TABLE 2.—Sewers constructed under various contracts chargeable to various sewer

| No. of contract. | Contractor.         | Location.                                                                                                                                                                                                          | Size of sewer.             | Length.      | Contract price per foot. |
|------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------|--------------------------|
|                  |                     |                                                                                                                                                                                                                    |                            | <i>Feet.</i> |                          |
|                  |                     |                                                                                                                                                                                                                    | 6 feet 6 inches diameter.  | 1,740.9      | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 6 feet diameter....        | 5,990.5      | .....                    |
|                  |                     |                                                                                                                                                                                                                    | Bell connection...         | 24           | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 18-inch.....               | 293.2        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 15-inch.....               | 931.1        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 30-inch brick.....         | 39.4         | .....                    |
| 2220             | John Jacoby a.....  |                                                                                                                                                                                                                    | 24-inch cast-iron pipe.    | 704.2        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 30-inch cast-iron pipe.    | 150          | .....                    |
|                  |                     |                                                                                                                                                                                                                    | Wrought-iron truss bridge. | 1            | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 24-inch pipe.....          | 220          | .....                    |
|                  |                     |                                                                                                                                                                                                                    | Slash Runsewer c.          | 174          | .....                    |
| 2387             | Adam McCandlish a   | Alley, between Richmond and Savannah streets and Minnesota and Brightwood avenues, and on Brightwood avenue between Quincy and Savannah streets, and on Quincy street between Brightwood avenue and Eighth street. | 18-inch.....               | 3,273        | \$1.27                   |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 9            | 25.00                    |
| 2390             | R. M. Moore & Co a. | Illinois avenue, between Brandywine and Flint streets, and on Brightwood avenue between Flint and Niagara streets.                                                                                                 | 12-inch.....               | 3,991        | .85                      |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 13           | 25.00                    |
|                  |                     |                                                                                                                                                                                                                    | 6 feet 6 inches diameter.  | 743.4        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 6 feet 3 inches diameter.  | 1,064.9      | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 6 feet diameter...         | 268.1        | .....                    |
| 2328             | Lyons Bros a.....   | Fifteenth street, between Pennsylvania avenue and F street, and on F street between Seventh and Fifteenth streets.                                                                                                 | 4 feet 6 inches diameter.  | 839.1        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | Bell section.....          | 84           | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 2-foot 6-inch connection.  | 40           | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 3-foot connection.         | 121.7        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 3-foot 6-inch connection.  | 120.2        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 4 feet 3 inches diameter.  | 662.8        | .....                    |
| 2394             | E. G. Gummel a..... | P street, between Thirty-first and Valley.                                                                                                                                                                         | 12-inch.....               | 1,138.05     | .92                      |
| 2394             | do.....             | C street NE., between Delaware avenue and First street.                                                                                                                                                            | 12-inch.....               | 651.65       | .86                      |
| 2394             | do.....             | T street NW., between Ninth and Tenth.                                                                                                                                                                             | 12-inch.....               | 517          | .88                      |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 3            | 26.00                    |
| 2393             | Andrew Gleeson..... | Sixth street SE., between K and N.                                                                                                                                                                                 | 6.25 feet diameter.        | 466.6        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | 4.5 feet diameter.         | 302.6        | .....                    |
|                  |                     |                                                                                                                                                                                                                    | Bell section.....          | 12.2         | .....                    |
| 2394             | E. G. Gummel a..... | S street NW., between Florida and Connecticut avenues.                                                                                                                                                             | 21-inch.....               | 123.6        | 1.57                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 1            | 28.00                    |
| 2394             | do.....             | D street NE., between Thirtieth street and Tennessee avenue.                                                                                                                                                       | 21-inch.....               | 645.9        | 1.34                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 4            | 28.00                    |
| 2394             | do.....             | Thirteenth street NE., between C and D.                                                                                                                                                                            | 15-inch.....               | 387.5        | 1.02                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 1            | 28.00                    |
| 2394             | do.....             | Thirty-seventh street, between N and O.                                                                                                                                                                            | 18-inch.....               | 384.74       | 1.46                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 1            | 28.00                    |
|                  |                     |                                                                                                                                                                                                                    | 24-inch.....               | 646.75       | 1.57                     |
| 2394             | do.....             | Fifteenth street SE., between Georgia avenue and C street.                                                                                                                                                         | 21 inch.....               | 430.1        | 1.35                     |
|                  |                     |                                                                                                                                                                                                                    | 15-inch.....               | 472.5        | 1.01                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 2            | 27.00                    |
| 2394             | do.....             | Fourteenth street SE., between East Capitol and A.                                                                                                                                                                 | 21-inch.....               | 372.1        | 1.40                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 2            | 28.00                    |
| 2394             | do.....             | Square 1075.....                                                                                                                                                                                                   | 15-inch.....               | 309.7        | 1.12                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 2            | 28.00                    |
| 2394             | do.....             | G street NW., between New Hampshire avenue and Twenty-seventh street.                                                                                                                                              | 24-inch.....               | 70.8         | 1.52                     |
|                  |                     |                                                                                                                                                                                                                    | 21-inch.....               | 587.2        | 1.36                     |
|                  |                     |                                                                                                                                                                                                                    | Manholes.....              | 5            | 25.00                    |

a This report includes work accounted for in annual report of fiscal year 1897.  
b Includes \$35.10 for repairing water-service pipes.  
c Repaired bottom of sewer.

appropriations for fiscal years 1895, 1896, and 1897, completed in fiscal year 1898.

| Allowance to contractor. | Materials furnished. |                 | Cost of inspection. | Cost of repairs to pavements. | Total cost.  | Appropriation.                                                    |
|--------------------------|----------------------|-----------------|---------------------|-------------------------------|--------------|-------------------------------------------------------------------|
|                          | Chargeable.          | Not chargeable. |                     |                               |              |                                                                   |
| \$117,837.81             | \$18,169.85          | \$572.53        | \$1,552.50          | \$480.40                      | \$138,613.09 | Rock Creek and B street intercepting sewer.                       |
| 5,459.37                 | 468.00               | 834.36          | 176.00              | .....                         | 6,937.73     | Suburban sewers, 1897.                                            |
| 3,297.82                 | 472.08               | 542.12          | 162.00              | .....                         | 4,474.02     | Do.                                                               |
| 54,838.60                | 7,308.85             | 80.31           | 486.00              | .....                         | 62,713.76    | Fifteenth and F streets portions Easbys Point intercepting sewer. |
| 908.97                   | 140.00               | 160.12          | 48.00               | 147.88                        | 1,404.97     | Replacing obstructed sewers, 1897.                                |
| 551.41                   | 84.00                | 95.57           | 39.00               | 264.76                        | 1,034.74     | Do.                                                               |
| 453.00                   | 81.25                | 86.87           | 28.00               | 9.40                          | 658.52       | Do.                                                               |
| 7,407.89                 | 1,861.04             | 2.27            | 310.00              | .....                         | 9,581.20     | Cleaning and repairing sewers and basins, 1897.                   |
| 186.68                   | 31.00                | 47.92           | 7.00                | 16.06                         | 288.66       | Main and pipe sewers, 1897.                                       |
| 822.27                   | 126.04               | 236.37          | 80.00               | 2.08                          | 1,266.76     | Do.                                                               |
| 392.66                   | 52.00                | 78.96           | 40.00               | .42                           | 564.04       | Do.                                                               |
| 524.81                   | 60.00                | 103.19          | 22.00               | 16.36                         | 726.36       | Do.                                                               |
| 1,981.00                 | 277.00               | 583.21          | 81.00               | .....                         | 2,922.21     | Do.                                                               |
| 504.61                   | 70.00                | 138.05          | 13.00               | .....                         | 725.66       | Do.                                                               |
| 352.02                   | 45.00                | 65.89           | 16.00               | .....                         | 478.91       | Do.                                                               |
| 905.28                   | 125.00               | 256.08          | 56.00               | 81.82                         | 1,424.18     | Do.                                                               |

d Includes \$22.50 for 450 linear feet of 6-inch pipe which was erroneously deducted from the contractor, but was paid for on a separate voucher.

TABLE 2.—Sewers constructed under various contracts chargeable to various sewer

| No. of contract. | Contractor.         | Location.                                                                                                                                                                         | Size of sewer.      | Length.      | Contract price per foot. |
|------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|--------------------------|
|                  |                     |                                                                                                                                                                                   |                     | <i>Feet.</i> |                          |
| 2394             | E. G. Gummel.....   | { W street NW., between Fourteenth and Fifteenth.<br>New Hampshire avenue NW., between V and W streets.<br>V street NW., between New Hampshire avenue and Seventeenth street.     | 24-inch.....        | 944.3        | \$1.96                   |
|                  |                     |                                                                                                                                                                                   | 21-inch.....        | 552.85       | 1.57                     |
|                  |                     |                                                                                                                                                                                   | 18-inch.....        | 600.3        | 1.38                     |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 5            | 30.00                    |
|                  |                     |                                                                                                                                                                                   |                     | 4            | 28.00                    |
| 2397             | Jas. McCandlish.... | { Sixteenth street SE., between Georgia avenue and D street.                                                                                                                      | 21-inch.....        | 404          | 1.40                     |
|                  |                     |                                                                                                                                                                                   | 18-inch.....        | 257.5        | 1.37                     |
|                  |                     |                                                                                                                                                                                   | 12-inch.....        | 137.2        | .87                      |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 2            | 25.00                    |
|                  |                     |                                                                                                                                                                                   |                     | 1            | 30.00                    |
| 2397             | .....do .....       | { G street NW., between Eighth and Nineteenth.                                                                                                                                    | 18-inch.....        | 344.35       | 1.37                     |
|                  |                     |                                                                                                                                                                                   | 15-inch.....        | 121.95       | 1.25                     |
|                  |                     |                                                                                                                                                                                   | 12-inch.....        | 995.75       | .95                      |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 3            | 27.00                    |
|                  |                     |                                                                                                                                                                                   |                     | 4            | 25.00                    |
| 2397             | .....do .....       | { S street NW., between Thirty-fourth and Thirty-fifth.<br>Seventeenth street SE., between B street and Massachusetts avenue.                                                     | 15-inch.....        | 353.5        | .99                      |
|                  |                     |                                                                                                                                                                                   | Manhole.....        | 1            | 25.00                    |
| 2399             | Wormley & Bolden..  | { Piney Branch Valley, Trenton, and Brandywine streets.                                                                                                                           | 24-inch.....        | 553          | 1.80                     |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 2            | 24.00                    |
| 2390             | R. M. Moore & Co... | { Woodley road, between Connecticut and Belmont avenues, and Connecticut avenue between Woodley road and Kalorama avenue.                                                         | 21-inch.....        | 5,043.2      | 1.39                     |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 19           | 25.00                    |
| 2394             | E. G. Gummel.....   | { Twentieth street, between Woodley road and Kalorama avenue.                                                                                                                     | 24-inch.....        | 217          | 1.41                     |
|                  |                     |                                                                                                                                                                                   | 21-inch.....        | 763.36       | 1.32                     |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 2            | 26.00                    |
|                  |                     |                                                                                                                                                                                   |                     | 1            | 25.00                    |
| 2394             | .....do .....       | { Kalorama avenue, between Nineteenth and Twenty-third streets.                                                                                                                   | 12-inch.....        | 205.5        | .80                      |
|                  |                     |                                                                                                                                                                                   | Manhole.....        | 1            | 25.00                    |
| 2394             | .....do .....       | { Providence street, between Twelfth and Thirteenth.<br>Hampton place, between Twentieth street and Rock Creek, and Twentieth street between Hampton place and Cincinnati street. | 12-inch.....        | 1,005        | .83                      |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 4            | 22.00                    |
| 2407             | W. H. H. Allen..... |                                                                                                                                                                                   | 15-inch.....        | 659.7        | 1.00                     |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 3            | 27.00                    |
|                  |                     |                                                                                                                                                                                   | 30-inch, brick..... | 507          | 4.84                     |
|                  |                     |                                                                                                                                                                                   | 24-inch.....        | 338.5        | 1.69                     |
|                  |                     |                                                                                                                                                                                   | Manholes.....       | 1            | 150.00                   |
| 2518             | B. J. Coyle .....   | { W street NW., between North Capitol and First, and North Capitol between W and Detroit streets.                                                                                 |                     | 2            | 30.00                    |
|                  |                     | 5 feet 3 inches diameter.                                                                                                                                                         | 1,461.73            | .....        |                          |
|                  |                     | 5 feet diameter....                                                                                                                                                               | 992.12              | .....        |                          |



appropriations for fiscal years 1895, 1896, and 1897, completed in fiscal year 1898—C't'd.

| Allowance to contractor. | Materials furnished. |                 | Cost of inspection. | Cost of repairs to pavements. | Total cost. | Appropriation.              |
|--------------------------|----------------------|-----------------|---------------------|-------------------------------|-------------|-----------------------------|
|                          | Chargeable.          | Not chargeable. |                     |                               |             |                             |
| \$3,481.29               | \$413.75             | \$327.70        | \$219.00            | \$200.32                      | \$5,142.06  | Main and pipe sewers, 1897. |
| 980.47                   | 129.08               | 233.36          | 52.00               | 5.18                          | 1,400.09    | Do.                         |
| 1,694.09                 | 173.80               | 306.44          | 32.00               | 233.88                        | 2,440.21    | Do.                         |
| 327.44                   | 48.57                | 75.13           | 14.00               | 9.98                          | 475.12      | Do.                         |
| 902.01                   | 95.11                | 279.09          | a 60.00             | .....                         | 1,336.21    | Do.                         |
| 11,283.33                | 1,039.82             | 1,816.21        | 1,314.00            | 140.71                        | 15,594.07   | Suburban sewers, 1897.      |
| 1,223.82                 | 184.91               | 383.24          | 45.00               | 379.36                        | 2,216.33    | Do.                         |
| 156.40                   | 25.00                | 30.88           | 8.00                | .....                         | 220.88      | Do.                         |
| 830.41                   | 106.00               | 148.10          | 58.00               | 512.54                        | 1,655.05    | Do.                         |
| 631.70                   | 92.22                | 140.64          | 64.00               | .....                         | 928.56      | Do.                         |
| 3,048.74                 | 634.87               | 178.02          | 254.00              | .....                         | 4,115.63    | Do.                         |
| 14,220.16                | 3,267.28             | 48.48           | 624.50              | .....                         | 18,160.42   | Do.                         |

a Includes \$48 charged to contractor.

TABLE 3.—Statement of sewers laid under the appropriation for assessments

PERMIT

| No. of order. | Location.                                                                                               | Pipe sewers laid (length in feet). |          |          | Manholes. | Branches. |
|---------------|---------------------------------------------------------------------------------------------------------|------------------------------------|----------|----------|-----------|-----------|
|               |                                                                                                         | 8-inch.                            | 10-inch. | 12-inch. |           |           |
|               | Seventeenth street, from Corcoran street north.                                                         |                                    |          |          |           |           |
| 13            | Private roads of Cleveland Park .....                                                                   | 1,548                              |          | 176      | 5         | 6         |
|               | C street NE., between Twelfth and Thirteenth (north side).                                              |                                    |          |          |           | 10        |
| 23            | Florida avenue NW., between Eighteenth and Nineteenth streets.                                          | 51                                 |          |          |           | 3         |
| 24            | Fifth street NW., between D and E (west side).                                                          |                                    |          | 219      |           | 6         |
| 20            | Square 577 .....                                                                                        | 11                                 |          |          |           | 1         |
| 18            | Square 520 .....                                                                                        |                                    | 14       |          |           | 2         |
| 16            | Square 520 .....                                                                                        |                                    | 11       |          |           | 3         |
| 17            | Square 503 .....                                                                                        |                                    | 39       |          |           | 3         |
| 14            | I street NE., between Eleventh and Twelfth (south side).                                                | 11                                 |          |          |           | 1         |
| 33            | Kenesaw avenue NW., between Fifteenth and Sixteenth streets.                                            |                                    |          | 32       |           | 1         |
|               | Klingie road and private roads of Cleveland Park.                                                       |                                    |          | 2,501    | 9         | 4         |
| 29            | Newark street, Cleveland Park .....                                                                     | 119                                |          |          |           | 1         |
| 23            | C. F. Norment's subdivision .....                                                                       |                                    | 275      |          | 3         | 7         |
| 22            | Square 132 .....                                                                                        | 51                                 |          |          | 1         | 6         |
| 21            | Q street NW., between Twenty-second and Twenty-third.                                                   |                                    | 57       |          |           | 3         |
| 30            | Randolph street NE., between Third and Fourth.                                                          |                                    |          | 35       |           | 1         |
| 26            | Square 777 .....                                                                                        | 11                                 |          |          |           | 1         |
| 32            | Thirty-sixth street NW., between Prospect and N.                                                        |                                    | 139      |          | 1         | 2         |
| 31            | Square 1015 .....                                                                                       |                                    |          | 94       |           | 2         |
| 34            | Twentieth street NW., between Wyoming and Kalorama avenues.                                             |                                    | 135      | 129      | 2         | 12        |
| 25            | Twenty-second street NW., between R and Decatur, and Decatur street from Twenty-second street westward. |                                    | 105      | 94       | 2         | 8         |
| 27            | Thirty-sixth street NW., between O and P.                                                               |                                    | 116      |          | 1         | 4         |
| 19            | Thirtieth street NW., between Cambridge and Irving.                                                     |                                    |          | 184      | 1         | 5         |
| 15            | Twelfth street NW., between S street and Vermont avenue.                                                |                                    | 26       |          |           | 1         |
|               | Total .....                                                                                             | 1,802                              | 917      | 3,464    | 25        | 92        |

a All work, except repairs to pavements, accounted for in annual report of 1897, and the cost of same is included.

b Balance brought forward from Klingie road.

c Constructed under contract No. 2542 by R. M. Moore & Co.

WHOLE

| No. of order. | Location.                                                     | Pipe sewers laid (length in feet). |          |          |          | Manholes. |
|---------------|---------------------------------------------------------------|------------------------------------|----------|----------|----------|-----------|
|               |                                                               | 8-inch.                            | 10-inch. | 12-inch. | 15-inch. |           |
| 1             | Wallach street NW., between Thirteenth and Fourteenth.        |                                    | 100      | 6        |          | 2         |
| 2             | 1629 Massachusetts avenue, in front of.                       |                                    |          |          | 3        | 1         |
| 3             | Square 860 .....                                              | 84                                 |          |          |          | 2         |
| 304           | Cedar street (square 132).                                    | 100                                |          |          |          | 1         |
| 307           | L street NW., between Sixth and Seventh.                      |                                    |          | 27       | 73       | 1         |
| 308           | Square 162 .....                                              |                                    |          | 9        |          |           |
| 306           | Square 913 .....                                              | 128                                |          |          |          | 1         |
| 309           | R street NW., between Seventh street and Rhode Island avenue. | 78                                 |          |          |          |           |
| 305           | Square 617 .....                                              | 99                                 |          |          |          | 2         |
|               | Total .....                                                   | 489                                | 100      | 42       | 76       | 10        |

and permit work and the whole cost to applicant for the fiscal year 1898.

## SYSTEM.

| Amount of deposit. | Cost to District of Columbia. | Cost to property owner. | Total cost. | Amount returned. | For whom done.           | Overseer.    | Date of completion. |
|--------------------|-------------------------------|-------------------------|-------------|------------------|--------------------------|--------------|---------------------|
| \$8.00             | \$7.77                        | \$7.78                  | a \$15.55   | \$0.22           | J. R. Marshall, agent..  | Thomas...    | Sept. 3, 1897       |
| (b)                | 493.28                        | 493.27                  | c 988.55    | (d)              | M. W. Wines .....        | Lanigan ..   | May 9, 1898         |
| 135.00             | 109.38                        | 109.38                  | 218.76      | 25.62            | W. A. Kimmel .....       | Prince ....  | May 10, 1898        |
| 91.00              | 18.85                         | 18.85                   | 37.70       | 72.15            | Charles W. Needham ..    | .....do .... | May 17, 1898        |
| 180.00             | 130.03                        | 130.04                  | 260.07      | 49.96            | Johanna Derwan .....     | Ward ....    | Mar. 31, 1898       |
| 6.00               | 5.08                          | 5.08                    | 10.16       | .92              | G. H. Borger .....       | Prince ....  | Jan. 28, 1898       |
| 22.00              | 8.58                          | 8.58                    | 17.16       | 13.42            | Mrs. Annie B. Gaegler .. | Thomas ....  | Jan. 11, 1898       |
| 10.00              | 7.20                          | 7.20                    | 14.40       | 2.80             | John E. Beall .....      | Prince ....  | Jan. 22, 1898       |
| 35.00              | 16.13                         | 16.14                   | 32.27       | 18.86            | George P. Newton ....    | Lanigan ..   | Nov. 6, 1897        |
| 12.50              | 5.33                          | 5.33                    | 10.66       | 7.17             | A. H. Whitlark .....     | .....do .... | June 2, 1898        |
| 28.00              | 13.92                         | 13.93                   | 27.85       | 14.07            | John Sherman .....       | Prince ....  | May 14, 1898        |
| 2,900.00           | 1,219.57                      | 1,219.58                | e 2,439.15  | (e)              | Charles W. King .....    | Ward ....    | May 1, 1898         |
| 66.00              | 42.67                         | 42.66                   | 85.33       | 23.34            | W. J. Palmer .....       | Thomas ....  | May 27, 1898        |
| 267.00             | 197.81                        | 197.82                  | 395.63      | 69.18            | Walker & Son .....       | .....do .... | Apr. 6, 1898        |
| 45.00              | 68.88                         | 45.00                   | f 113.88    | 1.03             | J. H. Lane .....         | Ward ....    | June 15, 1898       |
| 42.00              | 40.96                         | 40.97                   | 81.93       | 13.89            | Fredk. G. Atkinson ..    | .....do .... | May 21, 1898        |
| 41.50              | 27.61                         | 27.61                   | 55.22       | 10.60            | George A. Green .....    | Ward ....    | May 24, 1898        |
| 20.00              | 9.40                          | 9.40                    | 18.80       | 20.10            | Arthur Keith .....       | Lanigan ..   | June 8, 1898        |
| 130.00             | 78.95                         | 78.95                   | g 157.90    | 85.26            | John H. Walter .....     | Ward ....    | Apr. 20, 1898       |
| 75.00              | 54.89                         | 54.90                   | 109.79      | 20.10            | T. W. Kerr .....         | Prince ....  | Apr. 30, 1898       |
| 235.00             | 149.74                        | 149.74                  | 299.48      | 4.78             | W. D. West .....         | .....do .... | Apr. 2, 1898        |
| 187.00             | 148.53                        | 148.53                  | 297.06      | 38.47            | Lucinda A. Brown .....   | Ward ....    | Dec. 8, 1897        |
| 105.00             | 95.33                         | 95.33                   | 190.66      | 9.67             |                          |              |                     |
| 198.00             | 193.22                        | 193.22                  | 386.44      | 4.78             |                          |              |                     |
| 18.00              | 11.08                         | 11.08                   | 22.16       | 6.92             |                          |              |                     |
| 4,857.00           | 3,154.19                      | 3,130.37                | 8,284.56    | 488.43           |                          |              |                     |

d Balance carried forward to fiscal year 1899.

e Balance carried forward to job in private roads, Cleveland Park.

f The excessive cost of this work was due to the very difficult character of the excavation.

g A waiting bill for repairs to pavements.

## COST.

| Branches | Amount of deposit. | Cost to property owner. | Amount returned. | For whom done.            | Overseer.   | Date of completion. |
|----------|--------------------|-------------------------|------------------|---------------------------|-------------|---------------------|
| 2        | \$262.00           | \$165.17                | \$96.83          | Jacob Steiger .....       | Prince .... | Sept. 14, 1897      |
| 6        | 45.00              | 37.00                   | 8.00             | C. A. Langley .....       | do ....     | Aug. 10, 1897       |
| 2        | 163.00             | 126.15                  | 36.85            | E. J. Hannan .....        | do ....     | Aug. 20, 1897       |
| 2        | 150.00             | 106.25                  | 43.75            | Ellerson & Wemple .....   | do ....     | Feb. 25, 1898       |
| 2        | 208.16             | a 208.16                |                  | Capital Traction Co. .... | do ....     | May 31, 1898        |
| 6        | 40.00              | b 31.27                 | 8.73             | C. A. Langley .....       | Lanigan ..  | June 15, 1898       |
| 6        | 180.00             | 136.82                  | 43.18            | T. H. Pickford .....      | Ward ....   | May 19, 1898        |
| 3        | 96.00              | c 76.87                 |                  | George F. Brown .....     | do ....     |                     |
| 6        | 180.00             | 120.75                  | 59.25            | R. F. Lukel .....         | Prince .... | Mar. 5, 1898        |
| 27       | 1,116.00           | 1,008.44                | 296.59           |                           |             |                     |

a Paid out of general deposit.

b Reconstructing receiving basin.

c A waiting bill for repairs to pavements.

TABLE 4.—*Assess*

| No. of order. | Location.                                                                            | Pipe sewers laid (length in feet). |            |          |          |
|---------------|--------------------------------------------------------------------------------------|------------------------------------|------------|----------|----------|
|               |                                                                                      | 6-inch. <sup>a</sup>               | 8-inch.    | 10-inch. | 12-inch. |
|               | Monroe street, between Buchanan street and Navy place.                               |                                    |            |          |          |
|               | Monroe street, between Navy place and Maple avenue.                                  |                                    |            |          |          |
| 1             | Thirty-fourth street NW., between Q and R.                                           |                                    |            |          |          |
|               | Trinidad avenue NE., between Levis and King streets.                                 |                                    |            | 150      | 51       |
| 2             | Monroe street, between Harrison street and river.                                    |                                    |            | 202      |          |
| 3             | D street NE., between Tenth and Eleventh (south side).                               |                                    |            | 120      | 118      |
| 4             | Oak street, between Linden street and Harewood avenue.                               |                                    |            |          | 357      |
| 5             | Pomeroy street, between Linden and Third.                                            |                                    |            | 239      | 377      |
| 6             | Square 1012                                                                          |                                    |            | 99       | 63       |
| 7             | North Capitol, between S and Randolph streets (east side).                           |                                    |            |          | 189      |
| 8             | First street, between R and Randolph (east side)                                     |                                    |            | 127      |          |
| 12            | Square 281                                                                           |                                    |            | 113      | 114      |
| 13            | Square 617                                                                           |                                    |            | 292      |          |
| 14            | Square 1004                                                                          |                                    |            |          | 87       |
| 19            | Square 14                                                                            |                                    |            |          | 113      |
| 20            | Twenty-sixth street NW., between Pennsylvania avenue and M street (west side).       |                                    |            |          | 260      |
| 21            | First street SE., between K and L (west side)                                        |                                    |            | 252      |          |
| 22            | First street SE., between I and K (west side)                                        |                                    |            | 246      |          |
| 23            | Thirty-first street NW., between Chesapeake and Ohio Canal and M street (east side). |                                    |            |          | 127      |
| 24            | Indiana avenue NW., between First and Second streets (north side).                   | 21                                 |            |          | 113      |
| 25            | Seaton street NE., from Sixth street eastward (north side).                          |                                    |            | 295      |          |
| 26            | Whitney avenue, between Sherman avenue and Thirteenth street.                        |                                    |            |          | 575      |
| 27            | Twenty-second street NW., between N and O.                                           |                                    |            |          | 196      |
| 28            | Bates street NW., between North Capitol and First.                                   |                                    |            | 211      | 317      |
| 29            | Fourteenth street and Rhode Island avenue NW., northeast corner.                     |                                    |            |          | 3        |
| 34            | Petworth, block 22.                                                                  |                                    |            | 424      |          |
| 35            | Second and A, northeast corner; Third and A, northwest corner, SE.                   |                                    |            |          | 3        |
| 172           | Canal street property yard.                                                          |                                    |            |          |          |
| 143           | Bennings road, between Sixteenth and Seventeenth streets.                            |                                    |            |          | 37       |
| 118           | Brightwood avenue, between Farragut and Marshall.                                    |                                    |            |          |          |
| 154           | Breed's terrace, east of Center street.                                              |                                    |            |          | 283      |
| 179           | C street SE., between Tenth and Eleventh (south side).                               |                                    |            | 51       | 370      |
| 146           | Des Moines street, between Illinois avenue and Ninth street.                         |                                    |            | 294      |          |
| 131           | D street SE., between Fifteenth and Sixteenth.                                       |                                    |            |          | 320      |
| 182           | Eleventh street NE., between F and G (west side).                                    |                                    |            |          | 109      |
| 165           | E street NW., between Third and Fourth (south side)                                  |                                    |            |          | 195      |
| 187           | Fifteenth street NE., between G street and Maryland avenue (west side).              |                                    |            | 100      |          |
| 169           | Square 584                                                                           |                                    |            |          |          |
| 159           | First street SE., between L and M (west side)                                        |                                    |            | 92       |          |
| 175           | First street SW., between B and Canal                                                |                                    |            | 300      |          |
| 166           | Fifteenth and G streets NE., northwest corner                                        |                                    |            |          | 3        |
| 158           | Fourteenth street NE., between B and C (west side).                                  |                                    |            |          | 291      |
| 132           | First street SW., between I and K (west side)                                        |                                    |            | 171      | 286      |
| 116           | Farragut street, between Sherman street and Brightwood avenue.                       |                                    |            |          | 193      |
| 150           | Fourteenth street, between K street and Georgia avenue (west side).                  |                                    |            | 165      | 165      |
| 156           | Fourteenth street, between E and G (west side).                                      |                                    |            |          |          |
| 149           | Plint street, between Ninth street and Illinois avenue.                              |                                    |            | 187      | 293      |
| 164           | Frankfort street NE., between Twelfth and Thirteenth.                                |                                    | 463<br>309 |          |          |
| 177           | G street NE., between Eleventh and Twelfth (north side).                             | 18                                 |            |          | 191      |
| 178           | G street NE., between Eleventh and Twelfth (south side).                             |                                    |            |          | 128      |
| 155           | G street SE., between Fourteenth street and Pennsylvania avenue (south side).        |                                    |            |          | 156      |
| 162           | Hartford street NE., between Twelfth and Thirteenth                                  |                                    |            |          |          |
|               |                                                                                      |                                    | 315        |          |          |

<sup>a</sup> 6 inch pipe used in making lateral connections.<sup>b</sup> All work, except repairs to pavements, accounted for in annual report for 1897, and the cost of same is included.<sup>c</sup> Work begun in fiscal year 1897.

ment system.

| Man-holes. | Basins. | Branches. | Cost to District of Columbia. | Cost to property owner. | Total cost. | Overseer.           | Date of completion. |
|------------|---------|-----------|-------------------------------|-------------------------|-------------|---------------------|---------------------|
|            |         |           | \$8.10                        | \$8.09                  | b \$180.64  | Prince .....        | July 9, 1897        |
|            |         |           | 24.98                         | 24.98                   | b 573.22    | do .....            | July 10, 1897       |
|            |         |           | 95.61                         | 95.61                   | b 637.83    | Lanigan .....       | July 25, 1897       |
| 2          |         | 24        | 158.05                        | 158.06                  | c 316.11    | Ward .....          | July 6, 1897        |
| 2          |         | 8         | 130.01                        | 130.01                  | do .....    | do .....            | July 9, 1897        |
| 2          |         | 8         | 172.06                        | 172.06                  | 344.12      | Lanigan .....       | Sept. 17, 1897      |
| 2          |         | 18        | 223.23                        | 223.23                  | 446.46      | Ward .....          | Aug. 14, 1897       |
| 3          |         | 65        | 385.00                        | 385.00                  | 770.00      | do .....            | Aug. 31, 1897       |
| 1          |         | 12        | 97.65                         | 97.66                   | 195.31      | Lanigan .....       | Aug. 21, 1897       |
| 1          |         |           | 126.82                        | 126.82                  | 253.64      | do .....            | Oct. 1, 1897        |
| 1          |         | 8         | 96.36                         | 96.36                   | 192.72      | Ward .....          | Sept. 1, 1897       |
| 2          |         | 19        | 130.85                        | 130.85                  | 261.70      | Prince .....        | Oct. 14, 1897       |
| 2          |         | 32        | 179.82                        | 179.82                  | 359.64      | Lanigan .....       | Sept. 11, 1897      |
| 1          |         |           | 68.65                         | 68.65                   | 137.30      | Ward .....          | Sept. 11, 1897      |
|            |         | 10        | 50.31                         | 50.31                   | 100.62      | Prince .....        | Sept. 7, 1897       |
| 1          |         | 13        | 284.29                        | 284.29                  | 568.58      | do .....            | Oct. 25, 1897       |
| 1          |         | 15        | 139.57                        | 139.57                  | 279.14      | Ward .....          | Nov. 16, 1897       |
| 1          |         | 12        | 156.78                        | 156.78                  | 313.56      | do .....            | Nov. 16, 1897       |
| 1          |         | 5         | 85.69                         | 85.69                   | 171.38      | Prince .....        | Oct. 28, 1897       |
| 1          |         | 4         | 133.52                        | 133.52                  | 267.04      | Lanigan .....       | Sept. 28, 1897      |
| 2          |         | 11        | 139.04                        | 139.03                  | 278.07      | Prince .....        | Nov. 10, 1897       |
| 3          |         | 4         | 392.09                        | 392.09                  | 784.18      | Ward .....          | Oct. 14, 1897       |
| 1          |         | 2         | 132.08                        | 132.08                  | 264.16      | do .....            | Nov. 9, 1897        |
| 3          |         | 21        | 298.38                        | 298.38                  | 596.76      | Prince .....        | Nov. 2, 1897        |
|            | 1       |           |                               |                         | 53.57       | Lanigan .....       | Oct. 8, 1897        |
| 3          |         | 17        | 251.95                        | 251.95                  | 503.90      | Ward .....          | Oct. 20, 1897       |
|            | 2       |           |                               |                         | 94.14       | Lanigan .....       | Oct. 19, 1897       |
|            |         | 2         | 16.25                         | 16.24                   | 32.49       | James Lanigan ..... | June 6, 1898        |
|            |         |           |                               |                         |             | Prince .....        | Dec. 13, 1897       |
| 2          |         | 8         | 219.22                        | 219.21                  | 438.43      | Ward .....          | Jan. 25, 1898       |
| 2          |         | 5         | 211.43                        | 211.43                  | 422.86      | do .....            | Mar. 8, 1898        |
| 1          |         | 3         | 32.39                         | 32.39                   | 64.78       | do .....            | May 26, 1898        |
| 1          |         |           | 154.24                        | 154.25                  | 308.49      | do .....            | Jan. 18, 1898       |
| 2          |         | 10        | 182.16                        | 182.16                  | 364.32      | Prince .....        | Jan. 5, 1898        |
| 1          |         | 2         | 95.88                         | 95.80                   | e 191.77    | Ward .....          |                     |
| 2          |         | 9         | 156.38                        | 156.39                  | 312.77      | do .....            | May 31, 1898        |
|            |         | 5         | 65.44                         | 65.44                   | f 130.88    | do .....            |                     |
| 2          |         | 7         | 82.28                         | 82.27                   | 164.55      | Prince .....        | May 31, 1898        |
| 2          |         | 15        | 187.06                        | 187.06                  | 374.12      | Ward .....          | June 8, 1898        |
|            |         |           | 1.14                          | 1.15                    | g 2.29      | Lanigan .....       | May 12, 1898        |
|            | 1       |           |                               |                         | 33.13       | do .....            | Apr. 28, 1898       |
| 3          |         | 9         | 227.17                        | 227.17                  | 454.34      | Prince .....        | Mar. 21, 1898       |
| 2          |         | 11        | 188.92                        | 188.91                  | 377.83      | Lanigan .....       | Jan. 11, 1898       |
| 1          |         | 14        | 100.29                        | 100.29                  | 200.58      | Ward .....          | Dec. 9, 1897        |
| 2          |         | 9         | 109.98                        | 109.98                  | 209.96      | Lanigan .....       | Feb. 25, 1898       |
| 3          |         | 12        | 237.67                        | 237.57                  | 475.14      | Prince .....        | Mar. 18, 1898       |
| 1          |         | 17        | 244.47                        | 244.47                  | 488.94      | Ward .....          | Mar. 2, 1898        |
| 1          |         | 12        | 234.58                        | 234.58                  | 469.16      | Lanigan .....       | Apr. 13, 1898       |
| 1          |         | 7         | 140.77                        | 140.77                  | 281.54      | Ward .....          | June 16, 1898       |
| 1          |         | 4         | 106.65                        | 106.66                  | 213.31      | do .....            | June 16, 1898       |
| 1          |         | 8         | 93.99                         | 93.99                   | 187.98      | Prince .....        | Mar. 10, 1898       |
| 1          |         | 12        | 210.43                        | 210.43                  | 420.85      | Lanigan .....       | Apr. 8, 1898        |

d Cost of making artificial stone basin tops.

e A waiting bill for repairs to pavements.

f Work completed in fiscal year 1898.

g Adjusting basin top.

TABLE 4.—Access-

| No of order. | Location.                                                                        | Pipe sewers laid (length in feet). |         |          |          |
|--------------|----------------------------------------------------------------------------------|------------------------------------|---------|----------|----------|
|              |                                                                                  | 6-inch.                            | 8-inch. | 10-inch. | 12-inch. |
| 153          | Howard University subdivision, block 21 .....                                    |                                    |         | 114      |          |
| 157          | I street, between Sixth and Seventh (south side) ....                            |                                    |         | 120      | 366      |
| 141          | Kentucky avenue SE., between E and G streets .....                               |                                    |         | 181      | 181      |
| 181          | Kalorama avenue and Twentieth street NW., south-east corner .....                |                                    |         | 24       |          |
| 152          | Lansing street NE., between Twelfth and Thirteenth .....                         |                                    |         |          | 289      |
| 145          | Levis street NE., from Trinidad avenue westward ...                              |                                    |         |          | 108      |
| 184          | M street and New Hampshire avenue NW., north-east corner .....                   |                                    |         |          | 12       |
| 183          | M street and New Hampshire avenue NW., north-west corner .....                   |                                    |         |          | 18       |
| 137          | Meridian street, between Center and Brown .....                                  |                                    |         | 200      | 283      |
| 136          | Meridian street, from Center eastward .....                                      |                                    |         | 200      | 254      |
| 185          | New York avenue and Fourteenth street NW., northeast corner .....                |                                    |         |          | 15       |
| 163          | Nichols avenue, between Morris road and Maple avenue .....                       |                                    |         |          | 213      |
| 100          | Nichols avenue, between Morris road and Franklin street .....                    |                                    |         |          | 311      |
| 144          | Square 184 .....                                                                 |                                    |         | 3        |          |
| 147          | Ninth street NE., between Des Moines and Flint .....                             |                                    |         | 765      |          |
| 117          | O street, between North Capitol and First .....                                  |                                    |         |          | 573      |
| 173          | Pierce street, from Jefferson street southward .....                             |                                    |         | 166      | 334      |
| 133          | R street NW., between Florida avenue and Twenty-second street (south side) ..... |                                    |         | 135      |          |
| 168          | Square 615 .....                                                                 |                                    |         | 75       |          |
| 176          | Sixth and I streets NE., southeast corner .....                                  |                                    |         |          | 12       |
| 161          | Square 691 .....                                                                 |                                    |         |          | 128      |
| 138          | Square 617 .....                                                                 |                                    |         |          | 105      |
| 186          | Twenty-third street NW., between G and H (west side) .....                       |                                    |         | 129      |          |
| 180          | Twenty-sixth street NW., between E and F .....                                   |                                    |         |          | 151      |
| 170          | Third street SE., between M and N (east side) .....                              |                                    |         | 20       |          |
| 171          | Third street SE., between K and L (east side) .....                              |                                    |         | 46       |          |
| 174          | Trinidad, block 5 .....                                                          |                                    |         | 300      | 414      |
| 167          | Thirteenth street and Maryland avenue NE., south-west corner .....               |                                    |         |          |          |
| 130          | Trinidad, blocks 7 and 10 .....                                                  |                                    |         |          | 582      |
| 111          | Square 252 .....                                                                 |                                    |         | 127      |          |
| 139          | Thirteenth street NW., between Clifton and Rounoke .....                         |                                    |         |          | 99       |
| 142          | Rosedale and Isherwood, block 27 .....                                           |                                    |         |          | 262      |
| 115          | do .....                                                                         |                                    |         | 98       |          |
| 140          | Twenty-third street NW., between M and N .....                                   |                                    |         |          | 421      |
| 148          | Thirtieth street NW., between M street and Chesapeake and Ohio Canal .....       |                                    |         |          |          |
| 151          | Thirty-second street NW., between Water and Grace .....                          |                                    |         |          | 278      |
| 110          | Virginia avenue SW., between Sixth and Seventh streets (north side) .....        |                                    |         | 342      | 89       |
|              | Total .....                                                                      | 39                                 | 1,087   | 7,175    | 11,641   |

ment system—Continued.

| Man-holes. | Basins. | Branches. | Cost to District of Columbia. | Cost to property owner. | Total cost. | Overseer.    | Date of completion. |
|------------|---------|-----------|-------------------------------|-------------------------|-------------|--------------|---------------------|
| 1          | -----   | 9         | \$68.28                       | \$68.29                 | \$136.57    | Prince.....  | Feb. 28, 1898       |
| 3          | -----   | 9         | 338.31                        | 338.32                  | 676.63      | Ward.....    | May 12, 1898        |
| 2          | -----   | 13        | 197.74                        | 197.74                  | 395.48      | Prince.....  | Dec. 8, 1897        |
|            | 1       | -----     |                               |                         | 47.70       | Lanigan..... | June 7, 1898        |
|            |         | 2         | 169.45                        | 169.45                  | 338.90      | .....do..... | Mar. 3, 1898        |
| 1          | -----   | 15        | 96.28                         | 96.29                   | 192.57      | Prince.....  | Dec. 18, 1897       |
|            | 1       | -----     | 26.37                         | 26.37                   | a 52.74     |              |                     |
|            | 1       | -----     | 29.73                         | 29.72                   | a 59.45     |              |                     |
| 3          | -----   | 18        | 317.36                        | 317.35                  | 634.71      | Ward.....    | Nov. 8, 1897        |
| 2          | -----   | 20        | 288.17                        | 288.17                  | 576.34      | .....do..... | Oct. 30, 1897       |
|            | 1       | -----     | 28.58                         | 28.58                   | a 57.16     | .....do..... |                     |
| 2          | -----   | 6         | 127.04                        | 127.03                  | 254.07      | Prince.....  | June 7, 1898        |
| 2          | -----   | 7         | 149.19                        | 149.19                  | 298.38      | .....do..... | June 6, 1898        |
| 1          | 1       | -----     |                               |                         | 64.73       | Lanigan..... | Dec. 9, 1897        |
| 2          | -----   | 9         | 882.22                        | 882.22                  | 1,764.44    | Ward.....    | Feb. 15, 1898       |
| 2          | -----   | 6         | 355.42                        | 355.43                  | 710.85      | Thomas.....  | Nov. 3, 1897        |
| 3          | -----   | 22        | 433.02                        | 433.02                  | 866.04      | Ward.....    | June 13, 1898       |
| 1          | -----   | 6         | 80.10                         | 80.10                   | 160.20      | Condon.....  | Nov. 4, 1897        |
| 1          | -----   | 6         | 69.80                         | 69.80                   | 139.60      | Prince.....  | May 28, 1898        |
|            | 1       | -----     |                               |                         | 55.31       | Lanigan..... | May 16, 1898        |
| 1          | -----   | 1         | 84.00                         | 84.00                   | 168.00      | Prince.....  | Apr. 22, 1898       |
| 1          | -----   |           | 69.47                         | 69.46                   | 138.93      | .....do..... | Nov. 20, 1897       |
| 1          | -----   | 9         | 80.79                         | 80.79                   | a 161.58    | Lanigan..... |                     |
| 1          | -----   | 11        | 151.24                        | 151.25                  | a 302.49    | Prince.....  |                     |
|            |         | 1         | 12.80                         | 12.81                   | 25.61       | .....do..... | June 6, 1898        |
|            |         | 2         | 24.44                         | 24.45                   | 48.89       | .....do..... | June 4, 1898        |
| 4          | -----   | 27        | 441.28                        | 441.29                  | 882.57      | Ward.....    | May 14, 1898        |
|            | 1       | -----     |                               |                         | 44.39       | Lanigan..... | Apr. 23, 1898       |
| 5          | -----   | 15        | 531.41                        | 531.42                  | 1,062.83    | Prince.....  | Jan. 24, 1898       |
| 1          | -----   | 11        | 109.97                        | 109.97                  | 219.94      | .....do..... | Feb. 26, 1898       |
| 1          | -----   |           | 67.34                         | 67.35                   | 134.69      | Ward.....    | Dec. 2, 1897        |
| 2          | -----   | 2         | 128.07                        | 128.07                  | 256.14      | Prince.....  | Dec. 18, 1897       |
| 2          | -----   | 13        | 79.69                         | 79.70                   | 159.39      | .....do..... | Dec. 18, 1897       |
| 2          | -----   | 5         | 306.10                        | 306.10                  | 612.20      | Lanigan..... | Dec. 10, 1897       |
| 2          | -----   | 13        | 190.46                        | 190.46                  | 380.92      | Prince.....  | Apr. 4, 1898        |
| 1          | -----   | 4         | 95.84                         | 95.84                   | 191.68      | .....do..... | Apr. 4, 1898        |
| 2          | -----   | 15        | 178.36                        | 178.36                  | 356.72      | .....do..... | Mar. 15, 1898       |
| 120        | 11      | 761       | 13,557.90                     | 13,557.98               | 28,728.95   |              |                     |

a Awaiting bill for repairs to pavement.

TABLE 5.—Work done by day labor under various

REPLACING

| No. of order. | Location.                                                                                                        | Pipe sewers laid (length in feet). |          |          |          |          |          |          |
|---------------|------------------------------------------------------------------------------------------------------------------|------------------------------------|----------|----------|----------|----------|----------|----------|
|               |                                                                                                                  | 6-inch.                            | 10-inch. | 12-inch. | 15-inch. | 18-inch. | 21-inch. | 24-inch. |
| 1             | Sixth street SW., between F and G (west side) <i>c</i> .                                                         |                                    |          | 265      |          |          |          |          |
| 2             | Sixth street SW., between F and G (east side) ..                                                                 | 63                                 | 118      | 190      |          |          |          |          |
| 3             | F street SW., between Four-and-a-half and Sixth (south side) .....                                               | 60                                 | 219      |          | 215      |          |          |          |
| 4             | Eleventh street SE., between B street and North Carolina avenue (east side) .....                                | 36                                 |          | 78       | 148      |          |          |          |
| 5             | B street NE., between Sixth and Seventh. ....                                                                    |                                    |          |          |          |          |          | 319      |
| 6             | do. ....                                                                                                         | 75                                 |          | 18       |          |          | 299      |          |
| 7             | Sixth street SW., between School street and Virginia avenue (east side) .....                                    |                                    |          | 6        |          | 367      |          |          |
| 11            | Fourth street NE., between A and B. ....                                                                         | 15                                 |          | 9        |          | 335      |          |          |
| 418           | A street SE., between Third and Fourth (north side) .....                                                        | 3                                  | 125      | 173      |          |          |          |          |
| 419           | B street SE., between First and Second (south side) .....                                                        |                                    |          | 322      |          |          |          |          |
| 413           | E street SW., between Four-and-a-half and Sixth (north side) .....                                               |                                    |          | 101      |          |          |          |          |
| 417           | Eleventh and E streets SW., northeast corner. ....                                                               |                                    | 12       | 18       |          |          |          |          |
| 416           | Eleventh street SW., between D and E. ....                                                                       | 12                                 |          | 169      | 199      |          |          |          |
| 424           | E street, crossing Sixth street SW. (south side). ....                                                           |                                    |          |          | 54       |          |          |          |
| 408           | Four-and-a-half, between School and Virginia avenue, Virginia avenue, between Four-and-a-half and Sixth SW. .... |                                    |          | 67       |          | 156      |          |          |
| 420           | G street NW., between North Capitol and First (south side) .....                                                 | 12                                 |          |          | 144      |          |          |          |
| 427           | L street NW., between Twenty-sixth street and Pennsylvania avenue (south side) .....                             | 6                                  |          |          |          |          | 369      |          |
| 423           | New Jersey avenue NW., between B and C streets (east side) .....                                                 | 45                                 |          | 399      |          |          |          |          |
| 430           | Pennsylvania avenue NW., between Twenty-fourth and Twenty-fifth streets (south side) ..                          | 39                                 |          | 332      |          | 63       |          |          |
| 435           | 1110 Sixteenth street NW., in front of. ....                                                                     |                                    |          |          |          |          |          |          |
| 421           | Sixteenth street NW., between L and M. ....                                                                      | 18                                 |          |          | 87       | 324      |          |          |
| 428           | Thirteen-and-a-half street NW., between C street and Ohio avenue (east side) .....                               |                                    |          |          |          | 150      |          |          |
| 429           | Thirteen-and-a-half street NW., between C and D (east side) .....                                                | 9                                  |          |          | 307      |          |          |          |
| 422           | Square 212 .....                                                                                                 | 3                                  |          | 167      |          |          |          |          |
| 434           | Twenty-first street NW., between Q street and Massachusetts avenue (east side) .....                             |                                    |          |          |          | 78       |          |          |
| 432           | Thirteen-and-a-half street NW., between D and E (east side) .....                                                | 15                                 |          | 201      | 51       |          |          |          |
| 426           | Twenty-sixth street NW., between K and L (east side) .....                                                       | 3                                  |          |          |          |          |          | 408      |
| 425           | Thirteen-and-a-half street NW., between B street and Ohio avenue (east side) .....                               |                                    |          |          | 390      |          |          |          |
| 412           | Tenth street NW., between M and N (west side) .....                                                              | 36                                 |          | 395      | 146      |          |          |          |
| 414           | T street NW., between Le Droit and Harewood avenues .....                                                        | 48                                 |          |          | 340      |          |          |          |
| 415           | Twentieth street NW., between E and F (west side) .....                                                          |                                    |          | 227      |          | 48       |          |          |
| 433           | Square 237 .....                                                                                                 | 81                                 | 157      | 269      |          |          |          |          |
|               | Third street NW., between P and Q (west side) ..                                                                 |                                    |          |          |          |          |          |          |
|               | Four-and-a-half street SW., between C and D (east side) .....                                                    |                                    |          |          |          |          |          |          |
|               | Second and M streets SE., intersection of. ....                                                                  |                                    |          |          |          |          |          |          |
|               | N street NW., between Twenty-second and Twenty-third .....                                                       |                                    |          |          |          |          |          |          |
|               | G street SW., between Sixth and Seventh (south side) .....                                                       |                                    |          |          |          |          |          |          |
|               | G street SW., between Sixth and Seventh (crossing) .....                                                         |                                    |          |          |          |          |          |          |
|               | Tenth street NW., crossing T street (east side) ..                                                               |                                    |          |          |          |          |          |          |
|               | Square 364 .....                                                                                                 |                                    |          |          |          |          |          |          |
|               | Total. ....                                                                                                      | 579                                | 631      | 3,406    | 2,081    | 1,521    | 668      | 727      |

*a* Six-inch pipe used in making lateral connections.*b* The net cost of sewer is determined by deducting the cost of repairs to pavements plus cost of connections from the total cost.*c* Work begun in fiscal year 1897.*d* Includes \$4.65, cost of repairing service pipe.*e* Includes \$15.73, cost of remodeling receiving basin.*f* Includes \$5.45, cost of reconnecting 139 B street SE. with sewer.*g* Cost of remodeling basin.



sewer appropriations, fiscal year 1898.

OBSTRUCTED SEWERS.

| House connections made. | Total relaid. | Manholes. | Basins. | Branches. | Cost of materials. | Cost of labor. | Cost of repairs to pavements. | Total cost. | Cost of connections. | Net cost of sewer. b |
|-------------------------|---------------|-----------|---------|-----------|--------------------|----------------|-------------------------------|-------------|----------------------|----------------------|
| 6                       | 293           | 2         | ----    | 11        | \$79.54            | \$339.49       | \$14.15                       | \$433.18    | \$41.13              | \$377.90             |
| 16                      | 319           | 2         | ----    | 16        | 96.96              | 445.77         | 31.38                         | 574.11      | 40.89                | 501.84               |
| 21                      | 455           | 3         | ----    | 22        | 157.90             | 661.62         | d 60.33                       | 879.85      | 40.37                | 779.15               |
| 19                      | 507           | 2         | ----    | 14        | 123.41             | 576.35         | 52.30                         | 752.06      | 25.40                | 674.36               |
| -----                   | 319           | 1         | ----    | 11        | 236.71             | 493.42         | 48.25                         | 778.38      | -----                | 730.13               |
| 14                      | 299           | 1         | ----    | 7         | 189.81             | 476.99         | 36.90                         | 703.70      | e 40.97              | 625.83               |
| 2                       | 376           | 2         | ----    | 2         | 182.30             | 557.26         | 12.84                         | 752.40      | -----                | 739.56               |
| 12                      | 346           | 1         | ----    | 13        | 156.35             | 449.54         | 50.20                         | 656.09      | 44.40                | 561.49               |
| -----                   | 300           | -----     | -----   | 11        | 66.60              | 263.52         | -----                         | 330.12      | -----                | 330.12               |
| 9                       | 325           | 1         | ----    | 11        | 89.06              | 472.82         | f 64.69                       | 626.57      | 16.77                | 545.11               |
| -----                   | 106           | -----     | -----   | 1         | 22.55              | 126.75         | 65.82                         | 215.12      | -----                | 149.30               |
| -----                   | 30            | -----     | -----   | -----     | 6.33               | 28.11          | 1.89                          | 36.33       | -----                | 34.44                |
| -----                   | 346           | 1         | ----    | 10        | 100.85             | 431.45         | 12.06                         | 544.96      | -----                | 532.30               |
| -----                   | 54            | 1         | ----    | -----     | 30.87              | 63.89          | 16.97                         | 111.73      | -----                | 94.76                |
| -----                   | 231           | 1         | ----    | 8         | 91.72              | 364.98         | 49.39                         | 506.50      | g 12.22              | 444.48               |
| -----                   | 145           | 2         | ----    | 6         | 72.76              | 245.87         | 22.49                         | 341.12      | -----                | 318.63               |
| -----                   | 374           | 2         | ----    | 9         | 227.63             | 520.16         | 41.17                         | 788.96      | -----                | 747.79               |
| 15                      | 459           | 1         | ----    | 16        | 121.47             | 792.69         | h 34.32                       | 948.48      | 32.71                | 881.45               |
| -----                   | 393           | 2         | ----    | 7         | 135.40             | 447.25         | i 120.19                      | 702.84      | -----                | 582.65               |
| 8                       | 422           | 1         | ----    | 9         | 174.62             | 878.97         | k 64.78                       | 1,118.37    | 12.43                | 8.91                 |
| -----                   | 1             | 1         | -----   | -----     | 68.50              | 236.88         | 15.43                         | 320.81      | -----                | 1,041.07             |
| 1                       | 150           | 1         | -----   | -----     | 68.50              | 236.88         | 15.43                         | 320.81      | -----                | 305.38               |
| 9                       | 320           | 2         | ----    | 13        | 123.46             | 475.42         | l 44.82                       | 643.70      | 20.66                | 578.22               |
| -----                   | 168           | -----     | -----   | 4         | 38.46              | 225.67         | 112.46                        | 376.59      | -----                | 264.13               |
| -----                   | 78            | 1         | -----   | -----     | 55.33              | 586.34         | -----                         | m, n 641.67 | -----                | 641.67               |
| 4                       | 268           | 2         | ----    | 6         | 81.13              | 92.78          | 49.02                         | 222.93      | -----                | 173.91               |
| -----                   | 405           | 2         | ----    | 9         | 310.68             | 506.23         | 38.16                         | 855.07      | -----                | 816.91               |
| 2                       | 390           | -----     | -----   | -----     | 239.01             | 829.08         | -----                         | m 1,068.09  | -----                | 1,068.09             |
| 25                      | 517.4         | 1         | 1       | 27        | 170.30             | 626.25         | 121.97                        | 918.52      | 71.37                | 725.18               |
| 9                       | 350.7         | 2         | ----    | 8         | 136.84             | 518.55         | 166.64                        | 822.03      | 15.37                | 640.02               |
| 9                       | 273.5         | 1         | ----    | 13        | 102.94             | 372.92         | 33.42                         | 509.28      | 10.90                | 464.96               |
| 42                      | 448           | 4         | ----    | 46        | 157.39             | 831.79         | -----                         | n 989.18    | -----                | 989.18               |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 18.38                         | o 755.50    | -----                | 737.12               |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 32.61                         | o 458.11    | -----                | 425.50               |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 5.29                          | o 76.57     | -----                | 71.28                |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 332.76                        | o 1,438.27  | -----                | 1,105.51             |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 13.65                         | o 993.84    | -----                | 980.19               |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 47.19                         | o 459.52    | -----                | 412.33               |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 14.16                         | o 167.19    | -----                | 153.03               |
| -----                   | -----         | -----     | -----   | -----     | -----              | -----          | 160.49                        | o 1,456.39  | -----                | 1,295.90             |
| 223                     | 9,462.6       | 42        | 1       | 310       | 3,846.88           | 13,938.81      | 2,007.67                      | 24,983.13   | 425.59               | 22,602.88            |

A Includes \$3.80, cost of reconnecting 205 New Jersey avenue with sewer.

i Cost of reconnecting laterals by plumber (\$67.09) included.

j Repairing water-service pipe broken by settlement of sewer trench.

k Includes \$1.37, cost of repairing service pipe.

l Includes \$9.37, cost of reconnecting laterals by plumber.

m A waiting bill for repairs to pavements.

n The excessive cost of this work is due to the exceptionally difficult character of the excavation.

o All this work, except repairs to pavements, accounted for in annual report of 1897, and the cost of same is included.

TABLE 6.—Main

| No. of order. | Location.                                                                                                   | Pipe sewers laid (length in feet). |         |          |          |          |
|---------------|-------------------------------------------------------------------------------------------------------------|------------------------------------|---------|----------|----------|----------|
|               |                                                                                                             | 6-inch. <sup>a</sup>               | 8-inch. | 10-inch. | 12-inch. | 15-inch. |
|               | N street SW., between Third and Four-and-a-half Maryland avenue SW., between Ninth and Tenth                |                                    |         |          |          |          |
|               | Twentieth street NW., between G and H (west side)                                                           |                                    |         |          |          |          |
|               | Twentieth street NW., between H street and Pennsylvania avenue (west side)                                  |                                    |         |          |          |          |
|               | Tenth street SW., between C and D (west side)                                                               |                                    |         |          |          |          |
|               | Twenty-first street NW., between H and I (east side)                                                        |                                    |         |          |          |          |
|               | Twenty-first street NW., between H and I (west side)                                                        |                                    |         |          |          |          |
|               | Twenty-first street NW., between F and G (east side)                                                        |                                    |         |          |          |          |
|               | Thirty-fourth street NW., between N and O (east side)                                                       |                                    |         |          |          |          |
|               | Twenty-first street NW., between F and G (west side)                                                        |                                    |         |          |          |          |
|               | Twentieth street NW., between H street and Pennsylvania avenue (east side)                                  |                                    |         |          |          |          |
|               | Thirty-fifth street NW., between N and O (east side), and south side N street, crossing Thirty-fifth street |                                    |         |          |          |          |
|               | G street NE., between Third and Fourth (south side)                                                         |                                    |         |          |          |          |
|               | Thirty-fifth street NW., between T and U (crossing)                                                         |                                    |         |          |          |          |
| 1             | Square 403                                                                                                  |                                    |         |          | 156      |          |
| 2             | I street NW., between Twenty-fourth and Twenty-fifth (north side)                                           | 27                                 |         |          | 333      |          |
| 3             | I street NW., between Twenty-fourth and Twenty-fifth (south side)                                           | 27                                 |         |          | 333      |          |
| 4             | I street NW., between Twenty-fifth street and New Hampshire avenue (north side)                             | 18                                 |         |          | 282      |          |
| 5             | Twenty-third street NW., between H and I (east side)                                                        |                                    |         |          |          |          |
| 6             | Fourteenth and A streets SE., southeast corner                                                              |                                    |         |          | 33       |          |
| 7             | Square 1004                                                                                                 |                                    |         | 6        |          |          |
| 8             | First street and New York avenue NE., southwest corner                                                      |                                    |         |          | 3        |          |
| 9             | I street NW., between Twenty-third and Twenty-fourth                                                        | 42                                 |         |          | 257      |          |
| 10            | Twenty-third street NW., crossing H street (east side)                                                      |                                    |         |          |          | 84       |
| 11            | H street NW., between Twenty-second and Twenty-third (north side)                                           | 45                                 |         |          | 282      |          |
| 12            | I street NW., between Twenty-third and Twenty-fourth (south side)                                           | 15                                 |         |          | 275      |          |
| 13            | H street NW., between Twenty-second and Twenty-third (south side)                                           | 39                                 |         |          | 319      |          |
| 14            | Florida and Delaware avenues NE., southeast corner                                                          |                                    |         |          | 33       |          |
| 15            | Fourth street and Florida avenue NE., southeast corner                                                      |                                    |         |          |          | 72       |
| 16            | Third street and Florida avenue NE., southeast corner                                                       |                                    |         |          |          | 282      |
| 17            | Fourteenth street, between M and N (west side)                                                              | 18                                 |         |          |          |          |
| 18            | Fourth and K streets NE., northwest corner                                                                  |                                    |         |          |          | 9        |
| 19            | Sixth and Morris streets NE., southeast corner                                                              |                                    |         |          |          | 39       |
| 20            | Seventh and Morris streets NE., southwest corner                                                            |                                    |         |          |          | 15       |
| 21            | Eighth and F streets NE                                                                                     |                                    |         |          |          | 132      |
| 22            | Fourth street NE., between A and B (west side)                                                              |                                    |         |          |          |          |
| 23            | E street SE., between Fifteenth street and Kentucky avenue (north side)                                     |                                    |         |          |          | 198      |
| 24            | Fifteenth and E streets; Kentucky avenue and E street, northwest corners                                    |                                    |         | 87       |          |          |
| 25            | Square 236                                                                                                  |                                    |         |          |          |          |
| 26            | Square 995                                                                                                  | 6                                  |         | 6        | 313      |          |
| 27            | G street SE., between Eleventh and Twelfth                                                                  |                                    |         |          | 426      |          |
| 28            | Fifteenth street and Massachusetts avenue SE., northwest corner                                             |                                    |         |          | 42       |          |
| 29            | Thirteenth and B streets SE., northeast corner                                                              |                                    |         | 27       |          |          |
| 30            | Square 554                                                                                                  |                                    |         | 27       |          |          |
|               |                                                                                                             |                                    |         | 108      |          |          |

<sup>a</sup> Six-inch pipe used in making lateral connections.<sup>b</sup> All work except repairs to pavements accounted for in annual report for fiscal year 1897, and the cost of same is included.<sup>c</sup> Includes \$2 10, cost of repairing service pipe.<sup>d</sup> Includes \$15.55, cost of lateral connections.

and pipe sewers.

| Pipe sewers laid<br>(length in feet). |              |              | 3-foot<br>diameter,<br>brick. | Man-<br>holes. | Basins. | Branches. | Cost of<br>mater-<br>ials. | Cost of<br>labor. | Cost of<br>repairs<br>to pave-<br>ments. | Total<br>cost. |
|---------------------------------------|--------------|--------------|-------------------------------|----------------|---------|-----------|----------------------------|-------------------|------------------------------------------|----------------|
| 18.<br>inch.                          | 21.<br>inch. | 24.<br>inch. |                               |                |         |           |                            |                   |                                          |                |
|                                       |              |              | <i>Lin. ft.</i>               |                |         |           |                            |                   |                                          |                |
|                                       |              |              |                               |                |         |           |                            |                   | \$4. 78                                  | b \$42. 39     |
|                                       |              |              |                               |                |         |           |                            |                   | 31. 30                                   | b 487. 96      |
|                                       |              |              |                               |                |         |           |                            |                   | 6. 42                                    | b 523. 58      |
|                                       |              |              |                               |                |         |           |                            |                   | 4. 19                                    | b 510. 89      |
|                                       |              |              |                               |                |         |           |                            |                   | 8. 10                                    | b 81. 05       |
|                                       |              |              |                               |                |         |           |                            |                   | 19. 19                                   | b 751. 03      |
|                                       |              |              |                               |                |         |           |                            |                   | 9. 88                                    | b 472. 73      |
|                                       |              |              |                               |                |         |           |                            |                   | 35. 80                                   | b 690. 92      |
|                                       |              |              |                               |                |         |           |                            |                   | 16. 48                                   | b 662. 62      |
|                                       |              |              |                               |                |         |           |                            |                   | 31. 30                                   | b 884. 71      |
|                                       |              |              |                               |                |         |           |                            |                   | 5. 19                                    | b 366. 88      |
|                                       |              |              |                               |                |         |           |                            |                   | 32. 68                                   | b 801. 26      |
|                                       |              |              |                               |                |         |           |                            |                   | 10. 30                                   | b 285. 34      |
|                                       |              |              |                               |                |         |           |                            |                   | 19. 12                                   | b 102. 26      |
|                                       |              |              |                               | 1              | 1       |           | \$60. 33                   | \$124. 47         | 56. 61                                   | 301. 41        |
| 21                                    |              | 51           |                               | 3              |         | 12        | 168. 27                    | 388. 36           | c 37. 21                                 | 593. 84        |
| 3                                     | 15           |              |                               | 3              |         | 9         | 130. 57                    | 304. 83           | 31. 64                                   | 467. 04        |
|                                       | 36           |              |                               | 3              |         | 18        | 138. 82                    | 371. 32           | 32. 60                                   | 542. 74        |
|                                       | 362          |              |                               | 2              |         | 13        | 234. 73                    | 508. 37           | d 66. 21                                 | 809. 31        |
|                                       |              |              |                               |                | 1       |           | 22. 86                     | 41. 91            |                                          | 64. 77         |
|                                       |              |              |                               |                | 1       |           | 15. 61                     | 20. 50            |                                          | 36. 11         |
|                                       |              |              |                               |                | 1       |           | 21. 28                     | 37. 54            |                                          | 58. 82         |
| 36                                    |              |              |                               | 2              |         | 13        | 108. 65                    | 290. 73           | e 45. 43                                 | 444. 81        |
|                                       |              |              |                               | 2              |         |           | 52. 69                     | 135. 86           | 11. 41                                   | 199. 96        |
|                                       |              |              |                               | 2              |         | 18        | 107. 08                    | 303. 97           | f 35. 70                                 | 446. 75        |
|                                       | 15           |              |                               | 2              |         | 13        | 104. 22                    | 232. 02           | g 15. 59                                 | 351. 83        |
|                                       |              |              |                               | 1              |         | 11        | 100. 16                    | 323. 54           | 35. 96                                   | 459. 66        |
|                                       |              |              |                               |                | 1       |           | 27. 73                     | 36. 18            |                                          | 63. 91         |
|                                       |              |              |                               |                | 1       |           | 31. 41                     | 45. 75            |                                          | 77. 16         |
|                                       |              |              |                               |                | 1       |           | 34. 39                     | 43. 25            |                                          | 77. 64         |
|                                       |              |              |                               | 2              |         | 9         | 103. 54                    | 299. 80           | h 80. 88                                 | 484. 22        |
|                                       |              |              |                               |                | 1       |           | 20. 38                     | 25. 12            | 7. 62                                    | 53. 12         |
|                                       |              |              |                               |                | 1       |           | 22. 51                     | 25. 93            |                                          | 48. 44         |
|                                       |              |              |                               |                | 1       |           | 28. 94                     | 34. 29            |                                          | 62. 63         |
|                                       |              |              |                               |                | 1       |           | 24. 23                     | 24. 50            |                                          | 47. 73         |
|                                       |              |              |                               | 1              |         |           | 45. 52                     | 116. 88           | 17. 56                                   | 179. 96        |
|                                       |              |              |                               | 1              |         |           | 75. 81                     | 272. 22           |                                          | 348. 03        |
|                                       |              |              |                               |                | 2       |           | 52. 58                     | 125. 42           |                                          | 178. 00        |
|                                       |              |              |                               | 2              | 1       | 8         | 115. 06                    | 261. 75           | 47. 25                                   | 424. 06        |
|                                       |              |              |                               | 3              |         | 24        | 152. 53                    | 588. 71           | 184. 02                                  | 925. 26        |
|                                       |              |              |                               |                |         |           | 11. 58                     | 55. 60            | . 84                                     | 68. 02         |
|                                       |              |              |                               |                | 1       |           | 25. 15                     | 25. 27            |                                          | 50. 42         |
|                                       |              |              |                               |                | 1       |           | 25. 69                     | 29. 92            |                                          | 55. 61         |
|                                       |              |              |                               |                | 1       |           | 33. 09                     | 75. 13            |                                          | 108. 22        |

e Includes \$32.15, cost of reconstructions.  
f Includes 45 cents, cost of connecting water pipe.  
g Includes \$4.18, cost of connecting service pipe.  
h Includes \$46.10, cost of lateral connections.

TABLE 6.—*Main and*

| No. of order. | Location.                                                                                        | Pipe sewers laid (length in feet). |         |          |          |          |
|---------------|--------------------------------------------------------------------------------------------------|------------------------------------|---------|----------|----------|----------|
|               |                                                                                                  | 6-inch.                            | 8-inch. | 10-inch. | 12-inch. | 15-inch. |
| 31            | North Capitol and Hanover streets, northeast corner.....                                         |                                    |         |          | 12       |          |
| 32            | Square 897.....                                                                                  |                                    |         |          | 132      |          |
| 33            | H street NW., between Ninth and Tenth (north side).....                                          | 12                                 |         |          |          |          |
| 34            | Square 374.....                                                                                  | 24                                 |         | 6        | 125      | 3        |
| 35            | Twelfth street, north of M street NE. (west side).....                                           |                                    |         | 48       |          |          |
| 36            | Twelfth street, north of N street NE. (east side).....                                           |                                    |         |          | 21       |          |
| 37            | Twelfth street, north of N street NE. (west side).....                                           |                                    |         |          | 48       |          |
| 38            | Twelfth street, north of O street NE. (west side).....                                           |                                    |         |          | 42       |          |
| 39            | Twelfth street, north of O street NE. (east side).....                                           |                                    |         |          | 21       |          |
| 40            | Twelfth street, north of M street NE. (east side).....                                           |                                    |         | 24       |          |          |
| 41            | Florida avenue NE., between Fifth and Sixth streets.....                                         |                                    |         |          |          | 39       |
| 42            | Brentwood road, between Florida and New York avenues.....                                        |                                    |         |          | 30       |          |
| 43            | Trinidad avenue, between Lewis and Turner streets.....                                           |                                    |         |          | 63       |          |
| 44            | Square 281.....                                                                                  | 12                                 |         |          | 3        | 221      |
| 47            | Intersection of Sherman avenue with Marshall and Steuben streets.....                            |                                    |         |          | 45       |          |
| 48            | B street NE., between Fifth and Sixth.....                                                       | 51                                 |         |          | 18       |          |
| 49            | G street NE., between Eighth and Ninth.....                                                      |                                    |         |          |          | 21       |
| 50            | Thirteenth street and Kenesaw avenue, northwest corner.....                                      |                                    |         |          | 27       |          |
| 51            | Florida avenue and Bohrer street NW., northwest corner.....                                      |                                    |         | 12       |          |          |
| 52            | Third street and Pennsylvania avenue SE., northwest corner.....                                  |                                    |         |          | 3        |          |
| 53            | Third street and Pennsylvania avenue SE., northeast corner.....                                  |                                    |         |          | 3        |          |
| 54            | Fourth street and Pennsylvania avenue SE., northeast corner.....                                 |                                    |         |          |          | 18       |
| 55            | C street and Pennsylvania avenue SE.....                                                         |                                    |         |          |          |          |
| 57            | Sherman avenue, south of Irving street (west side).....                                          |                                    |         |          | 6        |          |
| 58            | Sherman avenue, south of Irving street (east side).....                                          |                                    |         |          | 24       |          |
| 59            | Sherman avenue, north of Irving street (west side).....                                          |                                    |         |          | 57       |          |
| 60            | Sheridan circle (east side).....                                                                 |                                    |         |          | 90       |          |
| 62            | Sixth street SW., between C street and Maryland avenue (west side).....                          |                                    |         |          |          | 108      |
| 63            | Sixth street NE., between H and I.....                                                           |                                    |         |          |          | 42       |
| 64            | L street NW., between First street and New Jersey avenue.....                                    |                                    |         |          |          | 120      |
| 65            | Florida and Champlain avenues.....                                                               |                                    |         |          |          |          |
| 66            | Seventeenth and V streets; Seventeenth and Seaton streets, northwest corners.....                |                                    |         |          | 60       |          |
| 67            | New Jersey avenue and R street NW., northeast corner.....                                        |                                    |         |          | 30       |          |
| 68            | Square 621.....                                                                                  | 18                                 |         |          |          | 67       |
| 69            | Ninth street, near north curb line N street SE. (west side).....                                 |                                    |         |          | 24       |          |
| 78            | Bates street NW., between North Capitol and First N and Union streets SW., northeast corner..... |                                    |         |          | 111      |          |
| 83            | Sixth and N streets SW., northeast corner.....                                                   |                                    |         |          | 12       |          |
| 85            | A street SE., between Second and Third (south side).....                                         |                                    |         |          | 9        |          |
| 629           | Canal street, property yard.....                                                                 |                                    |         | 129      | 192      |          |
| 617           | B street, about west curb line Seventh street SW. (north side).....                              |                                    |         |          | 27       |          |
| 607           | C street SE., between Tenth and Eleventh (south side).....                                       |                                    |         | 12       |          |          |
| 639           | Clifton street NW., between Thirteenth and Fourteenth (north side).....                          |                                    |         | 3        |          |          |
| 605           | D street NW., between Fifth and Sixth (north side).....                                          |                                    |         |          |          | 216      |
| 631           | D street SW., between Seventh and Eighth.....                                                    | 3                                  |         |          |          |          |
| 611           | D street SE., between South Capitol street and New Jersey avenue.....                            |                                    |         |          | 372      |          |
| 596           | D street SE., between Sixteenth and Seventeenth.....                                             |                                    |         |          |          |          |
| 579           | E street SW., between Six and a-half and Seventh.....                                            |                                    |         | 25       |          |          |
| 634           | Eleventh and C streets NW., northwest corner.....                                                |                                    |         |          |          |          |
| 590           | Eighth street NW., between D and E (east side).....                                              |                                    |         |          | 148      |          |
| 603           | Fourth and L streets SE., southwest corner.....                                                  |                                    |         |          |          | 24       |
| 628           | Fourth and L streets SE., northwest corner.....                                                  |                                    |         |          | 3        |          |
| 637           | Fourth and L streets SE., northwest corner.....                                                  |                                    |         |          |          |          |
| 612           | Fourteenth and I streets SE., intersection.....                                                  |                                    |         |          |          |          |

a Includes \$5.38, cost of repairing water pipes.

b Includes \$1.22, cost of repairing water pipes.

c Includes \$1.90, cost of repairing water pipes.

## pipe sewers—Continued.

| Pipe sewers laid<br>(length in feet). |              |              | 3-foot<br>diameter<br>brick. | Man-<br>holes. | Basins. | Branches. | Cost of<br>mater-<br>ials. | Cost of<br>labor. | Cost of<br>repairs to<br>pave-<br>ments. | Total<br>cost.    |
|---------------------------------------|--------------|--------------|------------------------------|----------------|---------|-----------|----------------------------|-------------------|------------------------------------------|-------------------|
| 18-<br>inch.                          | 21-<br>inch. | 24-<br>inch. |                              |                |         |           |                            |                   |                                          |                   |
|                                       |              |              | <i>Lin. ft.</i>              |                |         |           |                            |                   |                                          |                   |
|                                       |              |              |                              | 2              | 1       |           | \$22.87<br>76.72           | \$27.71<br>169.25 | \$7.64                                   | \$58.22<br>245.97 |
| 250                                   |              | 36           |                              | 2              |         | 11        | 152.76                     | 327.68            | a 60.22                                  | 540.66            |
| 154                                   |              |              |                              | 2              | 3       | 15        | 128.55                     | 348.41            | 99.80                                    | 576.76            |
|                                       |              |              |                              |                | 1       |           | 29.28                      | 45.39             |                                          | 74.67             |
|                                       |              |              |                              |                | 1       |           | 26.11                      | 29.72             |                                          | 55.83             |
|                                       |              |              |                              |                | 1       |           | 31.62                      | 47.57             |                                          | 79.19             |
|                                       |              |              |                              |                | 1       |           | 31.13                      | 45.95             |                                          | 77.08             |
|                                       |              |              |                              |                | 1       |           | 25.65                      | 26.74             |                                          | 52.39             |
|                                       |              |              |                              |                | 1       |           | 25.59                      | 28.52             |                                          | 54.11             |
| 45                                    |              | 33           |                              |                | 3       |           | 110.34                     | 135.26            |                                          | 245.60            |
|                                       |              |              |                              |                | 2       |           | 48.45                      | 46.01             |                                          | 94.46             |
|                                       |              |              |                              |                | 3       |           | 48.48                      | 79.72             |                                          | 128.20            |
| 3                                     |              |              |                              | 3              | 1       | 4         | 125.30                     | 235.49            | 106.58                                   | 467.37            |
|                                       |              |              |                              |                | 2       |           | 50.97                      | 61.05             |                                          | 112.02            |
|                                       | 352          |              |                              | 3              |         | 8         | 232.33                     | 491.98            | b 63.84                                  | 788.15            |
|                                       |              |              |                              | 1              |         |           | 12.81                      | 41.13             | 8.81                                     | 62.75             |
|                                       |              |              |                              |                | 1       |           | 18.92                      | 33.66             |                                          | 52.58             |
|                                       |              |              |                              |                | 1       |           | 22.62                      | 25.33             |                                          | 47.95             |
|                                       |              |              |                              | 1              | 1       |           | 36.30                      | 38.35             | 29.57                                    | 104.22            |
|                                       |              |              |                              | 1              |         |           | 17.75                      | 22.95             |                                          | 40.70             |
|                                       |              |              |                              |                | 2       |           | 10.54                      | 21.45             | 10.30                                    | 42.29             |
| 36                                    |              |              |                              | 1              | 1       |           | 63.19                      | 96.92             | c 11.25                                  | 171.36            |
|                                       |              |              |                              |                | 1       |           | 32.27                      | 36.60             |                                          | 68.87             |
|                                       |              |              |                              |                | 1       |           | 26.47                      | 23.01             |                                          | 49.48             |
|                                       |              |              |                              |                | 1       |           | 33.15                      | 50.45             |                                          | 83.60             |
|                                       |              |              |                              |                | 2       |           | 61.39                      | 70.17             | 7.85                                     | 139.41            |
|                                       |              |              |                              |                |         |           | 60.72                      | 260.78            | 19.82                                    | 341.32            |
| 75                                    |              |              |                              | 1              |         |           | 26.18                      | 46.89             |                                          | 73.07             |
|                                       |              |              |                              | 1              |         |           | 50.08                      | 134.71            | 12.68                                    | 197.47            |
| 6                                     |              |              |                              |                | 1       |           | 21.88                      | 34.60             |                                          | 56.48             |
|                                       |              |              |                              |                | 2       |           | 49.47                      | 73.55             |                                          | 123.02            |
|                                       |              |              |                              | 1              | 1       |           | 26.77                      | 38.42             |                                          | 65.19             |
| 179                                   |              |              |                              | 1              | 1       | 12        | 132.11                     | 523.32            | 116.83                                   | 772.26            |
|                                       |              |              |                              |                | 1       |           | 24.89                      | 36.67             |                                          | 61.56             |
|                                       |              |              |                              | 1              |         |           | 41.09                      | 104.95            |                                          | 146.04            |
|                                       |              |              |                              |                | 1       |           | 23.18                      | 27.05             |                                          | 50.23             |
|                                       |              |              |                              |                | 1       |           | 21.43                      | 28.67             |                                          | 50.10             |
|                                       |              |              |                              | 2              |         | 15        | 106.10                     | 324.52            | d 1.95                                   | 432.57            |
|                                       |              |              |                              |                |         |           | 48.09                      | 51.36             |                                          | e 99.45           |
|                                       |              |              |                              |                | 1       |           | 25.77                      | 45.46             | 8.43                                     | 79.66             |
|                                       |              |              |                              |                |         |           | 2.24                       | 13.34             | f 2.00                                   | 17.58             |
|                                       |              |              |                              |                | 1       |           | 13.87                      | 25.40             |                                          | 39.27             |
|                                       |              |              |                              | 1              |         | 6         | 84.82                      | 207.87            | 23.90                                    | 316.59            |
| 227                                   |              |              |                              | 2              |         | 7         | 118.42                     | 335.06            | 25.21                                    | 478.69            |
|                                       |              |              |                              | 3              |         | 27        | 158.71                     | 419.23            | g 224.67                                 | 802.61            |
|                                       | 398          |              |                              | 1              |         | 1         | 218.29                     | 471.19            |                                          | 689.48            |
|                                       |              |              |                              | 1              |         | 2         | 19.71                      | 29.37             |                                          | 49.08             |
|                                       |              |              |                              |                | 1       |           | 20.38                      | 25.37             |                                          | 45.75             |
|                                       |              |              |                              | 1              |         | 2         | 61.38                      | 165.97            | 15.32                                    | 242.67            |
|                                       |              |              |                              |                |         |           | 7.32                       | 37.82             | 2.76                                     | 47.90             |
|                                       |              |              |                              |                | 1       |           | 20.74                      | 27.19             |                                          | 47.93             |
|                                       |              | 15           |                              | 1              |         |           | 31.28                      | 32.30             |                                          | 64.58             |

d Cost of repairing water pipe.

e Cost of making artificial stone basin tops.

f Cost of repairing water service pipe.

g Includes \$3.90 cost of repairing service pipes.

TABLE 6.—Main and

| No. of order. | Location.                                                                                          | Pipe sewers laid (length in feet). |         |          |          |          |
|---------------|----------------------------------------------------------------------------------------------------|------------------------------------|---------|----------|----------|----------|
|               |                                                                                                    | 6-inch.                            | 8-inch. | 10-inch. | 12-inch. | 15-inch. |
| 582           | F street and Tennessee avenue NE., southwest corner                                                |                                    |         |          | 45       |          |
| 581           | Fifteenth and Gales streets NE., southeast corner                                                  |                                    |         |          |          |          |
| 614           | Fourteenth and W streets NW. and northeast corners east side of Fourteenth north of W              |                                    |         |          | 50       | 60       |
| 640           | G street NE., between Tenth and Eleventh                                                           |                                    |         |          |          | 255      |
| 638           | G street NE., between Eleventh and Twelfth                                                         |                                    |         |          | 135      |          |
| 615           | G street SE., between Fourteenth street and Pennsylvania avenue                                    |                                    |         |          | 18       |          |
| 588           | K street NE., near east side of North Capitol                                                      |                                    |         |          |          | 48       |
| 623           | M street SE., crossing First                                                                       |                                    |         |          |          | 42       |
| 599           | M street NW., crossing Thirtieth                                                                   |                                    |         |          | 9        |          |
| 600           | Potomac and N streets NW., southeast corner                                                        |                                    |         | 9        |          |          |
| 626           | Massachusetts and South Carolina avenues SE.                                                       |                                    |         | 84       |          |          |
| 556           | O street NE., between North Capitol and First                                                      |                                    |         |          |          | 53       |
| 602           | Square 167                                                                                         |                                    | 57      |          |          |          |
| 595           | North Capitol and Q streets                                                                        |                                    |         |          | 3        |          |
| 625           | Fifth street and Pennsylvania avenue SE., southeast corner                                         |                                    |         |          | 111      | 3        |
| 606           | Pennsylvania avenue NW., between Nineteenth and Twentieth streets                                  |                                    |         | 118      | 116      |          |
| 584           | Pennsylvania avenue SE., between Second and B streets                                              |                                    |         |          | 3        | 117      |
| 561           | P street, between Kingman place and Iowa circle, and Iowa circle, between P and Thirteenth streets |                                    | 21      | 263      | 116      |          |
| 592           | Seventh street SE., between Pennsylvania and South Carolina avenues                                |                                    |         |          |          |          |
| 587           | Sherman avenue, near south line of Whitney avenue                                                  |                                    |         |          | 18       |          |
| 574           | Second, B, and Canal streets SW                                                                    |                                    |         |          | 27       |          |
| 609           | Seventh street SW., between C and D                                                                |                                    |         |          | 12       |          |
| 641           | Square 250                                                                                         |                                    |         |          | 18       |          |
| 630           | Square 212                                                                                         |                                    | 37      |          |          |          |
| 636           | Third street SE., between K and L                                                                  |                                    |         | 30       |          |          |
| 621           | Twenty-seventh and Olive streets NW., northwest corner                                             |                                    |         |          | 18       |          |
| 619           | Twenty-seventh street and Dumbarton avenue NW., northwest corner                                   |                                    |         |          | 18       |          |
| 620           | Twenty-seventh and N streets NW., northwest corner                                                 |                                    |         |          | 24       |          |
| 622           | Twenty-seventh and M streets NW., northeast corner                                                 |                                    |         |          | 21       |          |
| 598           | Twenty-fifth and I streets NW., northwest corner                                                   |                                    |         |          | 12       |          |
| 616           | Thirteenth street, between G and H                                                                 |                                    |         |          | 86       | 63       |
| 589           | Twelfth and C streets NW                                                                           |                                    |         |          | 21       |          |
| 593           | Third street SW., between I and K (west side)                                                      |                                    |         |          | 60       |          |
| 591           | Third street SW., between K and L (west side)                                                      |                                    |         |          | 235      |          |
| 633           | Twenty-sixth and D streets NW., northeast corner                                                   |                                    |         |          | 33       |          |
| 635           | Third and Van streets SW., northwest corner                                                        |                                    |         | 15       |          |          |
| 594           | Third street, between L and M                                                                      |                                    |         |          |          |          |
| 586           | Twenty-second street NW., between M and N                                                          |                                    |         |          |          | 18       |
| 545           | Square 252                                                                                         |                                    |         |          |          | 3        |
| 597           | Square 378                                                                                         |                                    |         | 49       | 253      |          |
| 610           | Square 252                                                                                         | 12                                 |         | 31       |          |          |
| 608           | Twenty-first street NW., between C and Water                                                       |                                    |         | 102      |          |          |
| 613           | Thirty-second street NW., between Water and Grace                                                  |                                    |         |          |          |          |
| 627           | Square 601                                                                                         |                                    |         |          | 57       |          |
| 618           | Six-and-a-half and D streets SW., southwest corner                                                 |                                    |         |          | 103      |          |
| 546           | Sixth street SW., between C street and Virginia avenue (west side)                                 |                                    |         |          | 18       |          |
| 604           | Sixteenth street and Kenesaw avenue NW., northeast corner                                          |                                    |         | 18       | 45       |          |
| 601           | Sixth street SE., between Pennsylvania and North Carolina avenues (east side)                      |                                    |         |          | 15       |          |
| 573           | Sixth street NW., between E and F (east side)                                                      |                                    |         |          | 54       | 210      |
| 572           | Sixth street NW., between D and E (east side)                                                      |                                    |         |          | 355      |          |
| 571           | Sixth street NW., between E and F (west side)                                                      |                                    |         |          |          | 480      |
| 570           | Sixth street NW., between D and E (west side)                                                      |                                    |         |          | 375      |          |
| 632           | Southwest corner Spruce and Linden streets; southwest corner Harewood avenue and Spruce street     |                                    |         |          |          | 479      |
|               | Total                                                                                              |                                    |         |          | 72       |          |
|               |                                                                                                    | 369                                | 115     | 1,239    | 8,058    | 2,992    |

a Awaiting bill for repairs to pavements.

b Includes \$4.45, cost of repairing service pipes.

## pipe sewers—Continued.

| Pipe sewers laid length in feet). |          |          | 3-foot diameter, brick. | Man-holes. | Basins. | Branches. | Cost of materials. | Cost of labor. | Cost of repairs to pavements. | Total cost. |
|-----------------------------------|----------|----------|-------------------------|------------|---------|-----------|--------------------|----------------|-------------------------------|-------------|
| 18-inch.                          | 21-inch. | 24-inch. |                         |            |         |           |                    |                |                               |             |
|                                   |          |          | Lin. ft.                |            |         |           |                    |                |                               |             |
|                                   |          |          |                         |            | 1       |           | \$19.84            | \$18.25        |                               | \$38.09     |
|                                   |          |          |                         |            | 1       |           | 28.95              | 40.88          | \$7.62                        | 77.45       |
|                                   |          |          |                         | 1          | 2       |           | 86.08              | 185.66         | 78.73                         | 350.47      |
|                                   | 27       |          |                         | 2          |         | 3         | 125.98             | 314.32         |                               | a 440.30    |
|                                   |          |          |                         | 2          |         |           | 60.71              | 142.40         | 13.22                         | 216.33      |
|                                   |          |          |                         | 1          |         |           | 20.03              | 23.47          |                               | 43.50       |
|                                   | 36       |          |                         | 1          | 2       |           | 85.45              | 131.27         | 64.55                         | 281.27      |
|                                   |          |          |                         | 1          |         |           | 29.18              | 64.56          | 2.64                          | 96.38       |
|                                   |          |          |                         | 1          |         |           | 97.61              | 338.20         | 66.20                         | 502.01      |
| 15                                |          | 9        | 41.5                    |            | 1       |           | 21.15              | 27.39          |                               | 48.54       |
|                                   |          |          |                         |            | 1       |           | 34.78              | 59.08          |                               | 94.46       |
|                                   |          |          |                         | 1          |         | 1         | 31.36              | 81.45          |                               | 112.81      |
|                                   |          |          |                         |            | 1       |           | 22.55              | 33.05          |                               | 55.60       |
|                                   |          |          |                         |            | 1       |           | 19.82              | 22.70          | 2.13                          | 44.65       |
|                                   |          |          |                         | 2          | 1       |           | 68.66              | 108.56         | 14.95                         | 192.17      |
|                                   |          |          |                         | 3          |         | 12        | 103.40             | 349.10         | 34.21                         | 486.71      |
|                                   |          |          |                         | 1          | 1       | 3         | 72.08              | 148.75         | b 34.29                       | 255.12      |
|                                   |          |          |                         | 3          |         | 11        | 130.07             | 406.95         | 151.69                        | 688.71      |
| 426                               |          |          |                         | 3          |         |           | 215.28             | 425.24         | 106.91                        | 747.43      |
|                                   |          |          |                         | 1          | 1       |           | 42.14              | 56.02          |                               | 98.16       |
| 57                                |          | 203      |                         | 4          |         |           | 204.46             | 447.89         | 50.56                         | 702.91      |
|                                   |          | 237      |                         | 1          |         | 9         | 189.30             | 557.35         | 105.03                        | 851.68      |
|                                   |          |          |                         |            | 1       |           | 23.66              | 20.96          |                               | e 44.62     |
|                                   |          |          |                         | 1          | 1       | 4         | 25.01              | 53.15          | 20.33                         | 128.49      |
|                                   |          |          |                         | 1          |         |           | 18.78              | 26.43          | 3.60                          | 48.81       |
|                                   |          |          |                         |            | 1       |           |                    | 24.59          | 26.63                         | 51.22       |
|                                   |          |          |                         |            | 1       |           | 24.20              | 28.94          |                               | 53.14       |
|                                   |          |          |                         |            | 1       |           | 24.30              | 31.28          |                               | 55.58       |
|                                   |          |          |                         |            | 1       |           | 24.72              | 24.01          | 6.81                          | 55.54       |
|                                   |          |          |                         |            | 1       |           | 22.95              | 31.10          |                               | 54.05       |
|                                   |          |          |                         | 1          |         | 1         | 58.08              | 218.38         | 27.91                         | 304.37      |
|                                   |          |          |                         |            | 1       |           | 25.00              | 29.91          |                               | 54.91       |
|                                   | 268      |          |                         | 2          |         | 7         | 185.43             | 403.50         | 46.77                         | 635.70      |
|                                   | 27       | 15       |                         | 2          |         | 13        | 115.37             | 386.10         | 31.52                         | 532.99      |
|                                   |          |          |                         |            | 1       |           | 27.40              | 46.43          |                               | 73.83       |
|                                   |          |          |                         |            | 1       |           | 22.91              | 28.60          |                               | 51.51       |
|                                   |          |          |                         | 1          |         | 8         | 256.93             | 517.98         | 33.98                         | 808.89      |
| 30                                |          | 332      |                         | 1          |         | 1         | 136.94             | 326.65         | e 57.38                       | 520.97      |
| 27                                |          | 143      |                         | 3          | 2       | 13        | 164.06             | 347.35         | 145.16                        | 656.57      |
|                                   |          |          |                         |            |         | 4         | 9.31               | 20.56          | 6.75                          | 36.62       |
|                                   |          |          |                         | 1          |         | 6         | 37.08              | 108.10         | 18.90                         | 164.08      |
| 245                               |          |          |                         | 1          |         | 1         | 112.54             | 349.85         |                               | 462.39      |
|                                   |          |          |                         | 1          |         |           | 21.85              | 55.79          | 6.91                          | 84.55       |
|                                   |          |          |                         | 1          | 1       | 2         | 38.39              | 77.68          |                               | 116.07      |
|                                   |          |          |                         |            | 1       |           | 24.95              | 39.31          |                               | 64.26       |
|                                   |          |          |                         | 1          |         |           | 28.75              | 66.85          | 14.14                         | 109.74      |
|                                   |          |          |                         |            | 1       |           | 24.27              | 32.75          |                               | 57.02       |
|                                   |          |          |                         | 3          |         |           | 116.40             | 398.24         | 59.11                         | 573.75      |
|                                   |          |          |                         | 2          |         | 14        | 126.30             | 374.24         | 38.82                         | 539.36      |
| 30                                |          |          |                         | 4          |         | 18        | 236.78             | 582.32         | d 36.91                       | 856.01      |
|                                   |          |          |                         | 2          |         | 9         | 123.74             | 379.97         | 46.50                         | 550.21      |
| 39                                |          |          |                         | 4          |         | 13        | 241.28             | 625.15         | 23.28                         | 889.71      |
|                                   |          |          |                         |            | 2       |           | 55.51              | 87.00          |                               | 142.51      |
| 1,913                             | 1,536    | 1,074    | 41.5                    | 122        | 90      | 412       | 9,096.65           | 21,116.02      | 3,158.20                      | 39,899.76   |

c Includes \$5.11, cost of connecting No. 1236 Twenty-second street with sewer.

d Includes \$17.35, cost of repairing laterals and service pipes.

TABLE 7.—*Suburban*

| No. of order. | Location.                                                               | Pipe sewers laid (length in feet). |         |          |          |          |
|---------------|-------------------------------------------------------------------------|------------------------------------|---------|----------|----------|----------|
|               |                                                                         | 6-inch.a                           | 8-inch. | 10-inch. | 12-inch. | 15-inch. |
| 1             | Champlain avenue, between Superior and Erie streets.                    |                                    |         |          |          |          |
| 2             | Richmond street, between Brightwood avenue and Ninth street.            |                                    |         |          | 144      |          |
| 3             | Ninth street, between Richmond and Savannah.                            |                                    |         |          | 366      |          |
| 4             | Savannah street, between Eighth and Ninth.                              |                                    |         | 242      |          |          |
| 5             | First street N.W., between V and W.                                     |                                    |         |          | 283      |          |
| 6             | Columbia road, between Wyoming avenue and Nineteenth street.            |                                    |         |          |          |          |
| 7             | Columbia road, between Kalorama avenue and Nineteenth street.           |                                    |         |          |          |          |
| 8             | North Capitol, between R and Randolph streets (east side).              |                                    |         |          | 27       | 105      |
| 9             | First street, between R and Randolph crossing.                          |                                    |         |          |          |          |
| 10            | Lansing street, from Twelfth eastward.                                  | 6                                  |         |          |          | 339      |
| 16            | Massachusetts avenue, between Twenty-second street and Sheridan circle. |                                    |         |          |          |          |
| 17            | Sixth street N.E., between Seaton and T.                                | 3                                  |         |          | 3        | 221      |
| 18            | Hampton place, between Rock Creek and Twentieth street.                 |                                    | 39      |          |          |          |
| 821           | Brightwood avenue at Howard avenue crossing.                            |                                    |         |          | 57       |          |
| 830           | Burleigh, block 138.                                                    |                                    |         |          |          |          |
| 829           | Columbia road, from Kalorama avenue northward.                          |                                    |         |          |          |          |
| 824           | Dover street N.E., between Twelfth and Thirteenth.                      |                                    |         |          |          | 646      |
| 822           | Dover street N.E., between Tenth and Twelfth.                           |                                    |         |          |          |          |
| 823           | Fourteenth street road bridge.                                          |                                    |         |          |          |          |
| 815           | Farragut street, between Sherman and Brightwood avenues.                |                                    |         |          |          | 194      |
| 814           | do.                                                                     |                                    |         |          |          |          |
| 834           | Jefferson street, between Folk and Pierce.                              |                                    |         |          |          |          |
| 827           | Jackson street, between Fillmore and Pierce.                            |                                    |         | 168      | 318      |          |
| 835           | Kenesaw avenue N.W., between Fifteenth and Sixteenth streets.           |                                    |         |          | 27       |          |
| 811           | Marshall street, between Brightwood and Sherman avenue.                 |                                    |         |          |          |          |
| 812           | do.                                                                     |                                    |         |          |          |          |
| 813           | do.                                                                     |                                    |         |          |          | 259      |
| 820           | Pierce street, between Washington and Jefferson.                        |                                    |         |          | 116      |          |
| 819           | Rock Creek Church road, between Spring road and Eighth street.          |                                    |         |          |          |          |
| 831           | Trinidad avenue, between M and O streets.                               |                                    |         |          | 266      |          |
| 828           | Twenty-second street, between R and Decatur.                            |                                    |         |          |          | 165      |
| 826           | Thirteenth street, between Frankfort and Hartford.                      |                                    |         |          | 120      |          |
| 825           | Thirteenth street, between Dover and Frankfort.                         |                                    |         |          | 352      |          |
|               |                                                                         |                                    |         |          | 354      |          |
|               | Total.                                                                  | 9                                  | 39      | 410      | 2,433    | 1,929    |

a Six-inch pipe used in making lateral connections.



## sewers.

| Pipe sewers laid (length in feet). |          |          | 24-inch cast-iron pipe. | 3.75 by 5.625 feet brick. | Man-holes. | Branches. | Cost of materials. | Cost of labor. | Cost of repairs to pavements. | Total cost. |
|------------------------------------|----------|----------|-------------------------|---------------------------|------------|-----------|--------------------|----------------|-------------------------------|-------------|
| 18-inch.                           | 21-inch. | 24-inch. |                         |                           |            |           |                    |                |                               |             |
|                                    | 137      |          | <i>Lin. ft.</i>         | <i>Lin. ft.</i>           | 1          | 4         | \$90.49            | \$198.50       |                               | \$288.99    |
|                                    |          |          |                         |                           | 2          |           | 49.03              | 151.27         |                               | 200.30      |
|                                    |          |          |                         |                           | 1          |           | 117.02             | 324.32         |                               | 441.34      |
|                                    |          |          |                         |                           | 1          | 4         | 64.27              | 189.22         |                               | 253.49      |
|                                    |          |          |                         |                           | 2          | 5         | 97.11              | 272.63         |                               | 369.74      |
|                                    |          | 281      |                         |                           | 1          | 1         | 208.41             | 429.32         |                               | 637.73      |
|                                    | 267      |          |                         |                           | 1          |           | 156.47             | 391.36         |                               | 547.83      |
|                                    |          |          |                         |                           | 1          |           | 48.24              | 123.88         | \$11.19                       | 183.31      |
|                                    |          |          |                         |                           | 1          |           | 23.37              | 43.82          | 7.70                          | 74.89       |
|                                    |          |          |                         |                           | 1          | 3         | 162.58             | 617.95         |                               | 780.53      |
|                                    |          | 258      |                         |                           | 1          |           | 189.42             | 416.89         | 30.86                         | 637.17      |
|                                    | 48       |          |                         |                           | 2          | 1         | 119.30             | 246.73         | 22.50                         | 388.53      |
|                                    |          |          |                         |                           | 1          |           | 27.52              | 65.45          |                               | 92.97       |
|                                    |          |          |                         |                           | 1          |           | 23.43              | 99.75          | 11.85                         | 135.03      |
|                                    |          | 3        |                         | 76.1                      | 1          |           | 191.64             | 434.85         |                               | 626.49      |
| 144                                |          |          |                         |                           | 1          |           | 62.57              | 202.91         | 6.24                          | 271.72      |
|                                    |          |          |                         |                           | 3          | 8         | 195.00             | 673.33         |                               | 868.33      |
|                                    |          | 176      |                         |                           | 1          | 1         | 140.34             | 449.10         |                               | 589.44      |
|                                    |          | 45       | 36                      |                           | 1          |           | 262.04             | 358.03         |                               | 620.97      |
|                                    |          |          |                         |                           | 1          | 1         | 71.72              | 176.55         |                               | 248.27      |
| 364                                |          |          |                         |                           | 2          | 5         | 171.75             | 400.46         |                               | 572.21      |
| 146                                |          |          |                         |                           | 1          | 4         | 76.49              | 253.42         |                               | 329.91      |
|                                    |          |          |                         |                           | 4          | 18        | 177.90             | 381.72         | c 35.70                       | 595.32      |
|                                    |          |          |                         |                           |            |           | 6.32               | 25.42          |                               | 31.74       |
|                                    | 257      |          |                         |                           | 1          | 1         | 152.15             | 364.60         |                               | 516.75      |
| 289                                |          |          |                         |                           | 1          | 8         | 134.42             | 333.70         |                               | 468.12      |
|                                    |          |          |                         |                           | 1          | 8         | 99.24              | 374.01         |                               | 473.25      |
|                                    |          |          |                         |                           | 1          | 1         | 46.13              | 163.14         |                               | 209.27      |
|                                    |          |          |                         |                           | 3          | 7         | 103.56             | 255.28         |                               | 358.84      |
| 375                                |          |          |                         |                           | 3          |           | 250.35             | 639.04         |                               | 889.39      |
|                                    |          |          |                         |                           | 1          |           | 44.53              | 103.06         |                               | 147.59      |
|                                    |          |          |                         |                           | 2          | 8         | 107.50             | 300.79         |                               | 408.29      |
|                                    |          |          |                         |                           | 2          |           | 98.61              | 215.20         |                               | 313.81      |
| 1,318                              | 709      | 763      | 36                      | 76.1                      | 46         | 88        | 3,769.82           | 9,675.70       | 126.04                        | 13,571.59   |

<sup>b</sup> Includes cost of wrought-iron beams and other iron work necessary for supports for the cast-iron pipe.

<sup>c</sup> Cost of lateral connections.

TABLE 8.—Miscellaneous appropriations in

| No. of order. | Location.                                                                        | Pipe sewers laid (length in feet.) |          |          |
|---------------|----------------------------------------------------------------------------------|------------------------------------|----------|----------|
|               |                                                                                  | 8-inch.                            | 10-inch. | 12-inch. |
| 2             | Columbia road, between Florida avenue and Eighteenth street.                     | -----                              | 186      | -----    |
| 3             | Columbia road, between Eighteenth street and Wyoming avenue.                     | -----                              | 90       | -----    |
| 4             | Columbia road and California avenue, northwest corner                            | -----                              | 6        | -----    |
| 1             | Seventeenth street NW., between D and E                                          | -----                              | 9        | 18       |
| 20            | Eighth and M streets SE.                                                         | -----                              | 39       | 60       |
| 21            | New York avenue and Eleventh street NW., southeast corner.                       | -----                              | -----    | 21       |
| 1039          | Fourteenth street and Thomas circle, northwest corner                            | -----                              | -----    | 6        |
| 1050          | Four-and-a-half street and Missouri avenue NW., northeast and northwest corners. | -----                              | -----    | 21       |
| 1033          | Pennsylvania avenue NW., between Eighteenth and Twentieth streets.               | -----                              | -----    | 60       |
| 1034          | Second street SE., between East Capitol and A                                    | -----                              | -----    | 21       |
| 1045          | Seventeenth and Madison streets NW., northwest corner                            | 6                                  | -----    | -----    |
| 1048          | Seventeenth and Q streets NW., southeast corner                                  | -----                              | -----    | 12       |
| 5             | F street NE., between Fifth and Seventh                                          | -----                              | -----    | 6        |
| 6             | Tenth street NE., between East Capitol and B                                     | -----                              | -----    | -----    |
| 8             | Florida avenue NE., between Third and Fourth streets                             | -----                              | -----    | -----    |
| 14            | Florida avenue NE., east of Fifth street (north side)                            | -----                              | -----    | -----    |
| 1049          | Fourth and K streets NE., northwest corner                                       | -----                              | -----    | -----    |
| 7             | Twelfth street and Florida avenue NE.                                            | -----                              | -----    | 6        |
| 15            | Twelfth street, north of M street NE.                                            | -----                              | -----    | -----    |
| 9             | Sherman avenue, between Grant and Steuben streets                                | -----                              | -----    | 6        |
| 10            | Sherman and Sheridan avenues, northeast corner                                   | -----                              | -----    | 21       |
| 11            | Twentieth and H streets NW., northeast and southeast corners                     | -----                              | 15       | -----    |
| 17            | New Jersey and Rhode Island avenues NW., northeast corner.                       | -----                              | -----    | 3        |
| 1029          | Eleventh and B streets NW., northwest and northeast corners.                     | -----                              | -----    | 6        |
| 1027          | Eleventh and C streets NW., northeast corner                                     | -----                              | -----    | 42       |
| 1028          | Twelfth and C streets NW., northwest corner                                      | -----                              | -----    | -----    |
| 1032          | Twenty-sixth and I streets NW                                                    | -----                              | -----    | 3        |
| 1931          | Twenty-fifth street NW., between H and K                                         | -----                              | -----    | 42       |
| 1042          | Tenth and E streets NW., northwest and northeast corners                         | -----                              | -----    | 42       |
| 1044          | Tenth street, west side, near north side of D                                    | -----                              | -----    | 30       |
| 12            | Fourteenth and E streets SE., northwest and southwest corners.                   | -----                              | -----    | 30       |
| 19            | Ninth street SE., between Pennsylvania and South Carolina avenues.               | -----                              | -----    | 30       |
| 1038          | Fourth street SE., between E and G                                               | -----                              | -----    | 9        |
| 1041          | South Capitol street, between H and K                                            | -----                              | -----    | 9        |
| 13            | M street NW., between Thirty-second and Thirty-third (north side).               | -----                              | -----    | 9        |
| 16            | M street NW., between Thirty-second and Thirty-third (south side).               | -----                              | 30       | 3        |
| 1035          | M street NW., at Potomac street (south side)                                     | -----                              | 39       | -----    |
| 1036          | Twenty-seventh and O streets NW., northeast corner                               | -----                              | -----    | 9        |
| 1043          | Third street SW., between I and K                                                | -----                              | -----    | 24       |
| 18            | Virginia avenue SW., between South Capitol street and Delaware avenue.           | -----                              | 3        | -----    |
| 23            | Delaware and Virginia avenues SW., northeast corner                              | -----                              | -----    | 36       |
| 24            | Sixth and N streets SW., southeast corner                                        | -----                              | -----    | 12       |
| 1025          | Four-and-a-half street SW., north of N street (west side)                        | -----                              | -----    | 3        |
| 1026          | Four-and-a-half street SW., south of N street (west side)                        | -----                              | -----    | 3        |
| 1040          | Kenesaw avenue and Park road                                                     | -----                              | -----    | -----    |
| 1051          | Louisiana avenue, north side, west of Ninth street NW                            | -----                              | -----    | 6        |
| 1030          | North Capitol street and Florida avenue, northeast corner                        | -----                              | -----    | 24       |
| 1047          | Twenty-second and H streets NW., southwest corner                                | -----                              | -----    | -----    |
| 1046          | Twenty-second and H streets NW., southeast corner                                | -----                              | -----    | -----    |
|               | Total                                                                            | 6                                  | 417      | 594      |

a Includes \$22.77, cost of repairs to pavements.

b Basins reconstructed.

c Adjusting basins.

*fiscal year 1898; work performed by day labor.*

| Man-holes. | Basins. | Cost of materials. | Cost of labor. | Cost of contingencies. | Total cost. | Appropriation.                                                      |
|------------|---------|--------------------|----------------|------------------------|-------------|---------------------------------------------------------------------|
| .....      | 5       | \$135.30           | \$182.83       | \$15.91                | \$334.04    | Paving Connecticut avenue and Columbia road, 1898.                  |
| .....      | 2       | 68.62              | 151.43         | a 34.91                | 254.96      | Do.                                                                 |
| .....      | 1       | 21.69              | 25.45          | 2.36                   | 49.50       | Do.                                                                 |
| .....      | 3       | 69.11              | 130.31         | 9.97                   | 209.39      | Repairs to concrete pavements, 1898.                                |
| 1          | 3       | 86.75              | 141.55         | 11.42                  | 239.72      | Do.                                                                 |
| .....      | 1       | 24.84              | 31.30          | 2.81                   | 58.95       | Do.                                                                 |
| .....      | 1       | 33.12              | 26.43          | 2.98                   | 62.53       | Do.                                                                 |
| .....      | 2       | 44.53              | 64.67          | 5.46                   | 114.66      | Do.                                                                 |
| .....      | 4       | 91.54              | 101.90         | 9.67                   | 203.11      | Do.                                                                 |
| .....      | 1       | 28.40              | 44.25          | 3.63                   | 76.28       | Do.                                                                 |
| .....      | 1       | 21.03              | 28.15          | 2.46                   | 51.64       | Do.                                                                 |
| .....      | 1       | 17.08              | 29.30          | 2.32                   | 48.70       | Do.                                                                 |
| .....      | b 3     | 60.93              | 65.84          | 6.34                   | 133.11      | Improvements and repairs, northeast section, 1898.                  |
| .....      | b 5     | 101.33             | 113.32         | 10.73                  | 225.38      | Do.                                                                 |
| .....      | .....   | 3.13               | 6.56           | .48                    | c 10.17     | Do.                                                                 |
| .....      | .....   | .....              | 2.98           | .12                    | d 2.50      | Do.                                                                 |
| .....      | .....   | 2.21               | 7.66           | .49                    | c 10.36     | Do.                                                                 |
| .....      | b 2     | 26.28              | 46.08          | 3.62                   | 75.98       | Improvement, Twelfth street NE., 1898.                              |
| .....      | .....   | 37.40              | 92.58          | 6.50                   | e 136.48    | Do.                                                                 |
| .....      | b 1     | 17.76              | 25.58          | 2.17                   | 45.51       | Improvement of Sherman avenue, 1898.                                |
| .....      | 1       | 25.11              | 27.88          | 2.65                   | 55.64       | Do.                                                                 |
| .....      | b 2     | 44.06              | 55.06          | 4.96                   | 104.08      | Improvements and repairs, northwest section, 1898.                  |
| .....      | b 1     | 20.74              | 23.47          | 2.21                   | 46.42       | Do.                                                                 |
| .....      | 2       | 41.14              | 56.97          | 4.91                   | 103.02      | Do.                                                                 |
| .....      | 1       | 28.44              | 44.99          | 3.67                   | 77.10       | Do.                                                                 |
| .....      | 1       | 20.38              | 31.36          | 2.59                   | 54.33       | Do.                                                                 |
| .....      | 2       | 40.14              | 43.75          | 4.19                   | 88.08       | Do.                                                                 |
| .....      | 4       | 89.03              | 98.61          | 9.38                   | 197.02      | Do.                                                                 |
| .....      | 2       | 49.85              | 40.20          | 4.50                   | 94.55       | Do.                                                                 |
| .....      | 1       | 26.05              | 49.29          | 3.77                   | 79.11       | Do.                                                                 |
| .....      | .....   | 1.55               | 8.30           | .49                    | c 10.34     | Improvements and repairs, southeast section, 1898.                  |
| .....      | 2       | 45.68              | 61.35          | 5.35                   | 112.38      | Do.                                                                 |
| .....      | 3       | 71.19              | 75.25          | 7.32                   | 153.76      | Do.                                                                 |
| .....      | 3       | 60.22              | 72.03          | 6.61                   | 138.86      | Do.                                                                 |
| .....      | 3       | 61.94              | 67.20          | 6.46                   | 135.60      | Improvements and repairs, Georgetown, 1898.                         |
| .....      | .....   | 36.05              | 73.44          | 5.47                   | b 114.96    | Do.                                                                 |
| .....      | 1       | 25.33              | 39.33          | 3.23                   | 67.89       | Do.                                                                 |
| .....      | 1       | 53.16              | 92.98          | 7.31                   | 153.45      | Do.                                                                 |
| 1          | 1       | 16.38              | 63.58          | 4.00                   | 83.96       | Do.                                                                 |
| .....      | 2       | 53.08              | 67.49          | 6.03                   | 126.60      | Improvements and repairs, southwest section, 1898.                  |
| .....      | 1       | 17.07              | 17.85          | 1.75                   | 36.67       | Do.                                                                 |
| .....      | 1       | 26.87              | 39.01          | 3.29                   | 69.17       | Do.                                                                 |
| .....      | 1       | 21.94              | 32.91          | 2.74                   | 57.59       | Do.                                                                 |
| .....      | 1       | 20.51              | 34.11          | 2.73                   | 57.35       | Do.                                                                 |
| .....      | 1       | 20.51              | 29.70          | 2.51                   | 52.72       | Do.                                                                 |
| .....      | .....   | 9.50               | 9.50           | .95                    | f 19.95     | Improvement Kenesaw avenue and Park road, 1898.                     |
| .....      | 1       | 20.74              | 24.18          | 2.25                   | 47.17       | Repairing sidewalks and curbs around public reservations, 1898.     |
| .....      | 1       | 24.23              | 32.65          | 2.84                   | 59.72       | Paving North Capitol street between O and P streets, 1898.          |
| .....      | 1       | 20.15              | 26.01          | 2.31                   | 48.47       | H street NW., between Twenty-second and Twenty-third streets, 1898. |
| .....      | 1       | 21.77              | 39.95          | 3.09                   | 64.81       | Do.                                                                 |
| 2          | 78      | 1,003.86           | 2,695.97       | 253.91                 | 4,853.74    |                                                                     |

d Abandoning basins.

e Reconstructing and adjusting basins.

f Raising manhole to grade.

TABLE 8.—*Miscellaneous appropriations in fiscal*

FLUSHING BASINS

| No. of<br>order. | Location.                                        | Pipe sewers laid (length in<br>feet). |          |          |
|------------------|--------------------------------------------------|---------------------------------------|----------|----------|
|                  |                                                  | 8-inch.                               | 10-inch. | 12-inch. |
| 1                | Various .....                                    | 18                                    |          |          |
| 2                | Park street and Piney Branch road <i>a</i> ..... |                                       |          |          |
|                  | Total .....                                      |                                       |          |          |

*a* Basin repaired.

year 1898; work performed by day labor—Continued.

AND CONNECTIONS.

| Three-fourths inch lead pipe. | Solder.               | Basins constructed. | Cost of materials. | Cost of labor. | Cost of repairs to pavements. | Total cost. |
|-------------------------------|-----------------------|---------------------|--------------------|----------------|-------------------------------|-------------|
| <i>Lin. feet.</i><br>211      | <i>Pounds.</i><br>18½ | <i>Number.</i><br>7 | \$409.01           | \$438.83       | \$11.53                       | \$859.37    |
| -----                         | -----                 | 1                   | 32.07              | 34.17          | -----                         | 66.24       |
| -----                         | -----                 | -----               | 441.08             | 473.00         | 11.53                         | 925.61      |

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TABLE 9.—Number of inspectors, foremen, and other employees of the sewer and property divisions and engineers' stables temporarily required, and appropriations from which paid, for the year ended June 30, 1898.

| Class.             | Number employed. | Cleaning and repairing sewers and basins. | Replacing obstructed sewers. | Main and pipe sewers. | Suburban sewers. | Rock Creek and B street intercepting sewer. | Fifteenth and F streets portions of East by's Point main intercepting sewer. | Tiber Creek and New Jersey avenue high level intercepting sewer. |
|--------------------|------------------|-------------------------------------------|------------------------------|-----------------------|------------------|---------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------|
| Foremen.....       | 11               | \$5,411.33                                | \$884.50                     | \$1,472.75            | \$694.50         | \$72.00                                     | \$95.00                                                                      | .....                                                            |
| Inspectors.....    | 18               | 531.50                                    | 161.00                       | 1,341.00              | 4,316.50         | 1,545.00                                    | 506.00                                                                       | \$1,398.50                                                       |
| Other employees .. | 403              | 31,078.85                                 | 14,404.96                    | 24,543.07             | 11,484.98        | 2,501.74                                    | 1,905.30                                                                     | 1,557.82                                                         |
|                    | 432              | 37,021.68                                 | 15,450.46                    | 27,356.82             | 16,495.98        | 4,118.74                                    | 2,506.30                                                                     | 2,956.32                                                         |

| Class.             | Automatic siphons. | Assessment and permit work. | Repairs to concrete pavements. | Repairing sidewalks and curbs around public reservations. | Improvements and repairs, northeast section. | Improvements and repairs, southeast section. | Improvements and repairs, northwest section. | Improvements and repairs, southwest section. |
|--------------------|--------------------|-----------------------------|--------------------------------|-----------------------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
| Foremen.....       | \$51.00            | \$1,344.66                  | \$61.00                        | \$4.00                                                    | \$15.00                                      | \$20.00                                      | \$34.00                                      | \$13.00                                      |
| Inspectors.....    |                    | 76.00                       |                                |                                                           |                                              |                                              |                                              |                                              |
| Other employees... | 420.00             | 22,455.39                   | 536.86                         | 20.18                                                     | 245.74                                       | 188.63                                       | 368.47                                       | 203.07                                       |
|                    | 471.00             | 23,876.05                   | 597.86                         | 24.18                                                     | 260.74                                       | 208.63                                       | 402.47                                       | 221.07                                       |

| Class.             | Improvements and repairs, Georgetown. | Paving North Capitol street from O to Q streets. | Paving H street N.W. from Twenty-second to Twenty-third streets. | Paving Connecticut avenue and Columbia road. | Grading and regulating Sherman avenue. | Grading and regulating Twelfth street N.E., extended. | Grading and regulating Kenesaw avenue and Park road. |
|--------------------|---------------------------------------|--------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------------------------------------|------------------------------------------------------|
| Foremen.....       | \$30.50                               | \$3.00                                           | \$5.00                                                           | \$15.00                                      | \$6.00                                 | \$10.00                                               | .....                                                |
| Inspectors.....    |                                       |                                                  |                                                                  |                                              |                                        |                                                       |                                                      |
| Other employees .. | 306.52                                | 29.65                                            | 60.96                                                            | 267.87                                       | 47.46                                  | 128.66                                                | \$9.50                                               |
|                    | 337.02                                | 32.65                                            | 65.96                                                            | 282.87                                       | 53.46                                  | 138.66                                                | 9.50                                                 |

TABLE 10.—Average cost per foot of sewers.

| Size.                             | Length in feet. | Materials. | Labor.   | Total.  |
|-----------------------------------|-----------------|------------|----------|---------|
| Eight-inch.....                   | 2,010           | \$0.234—   | \$0.864+ | \$1.098 |
|                                   | 1,959           | .222+      | .864+    | 1.076   |
| Ten-inch.....                     | 9,611           | .293+      | .898+    | 1.191   |
|                                   | 8,831           | .29—       | .816+    | 1.106   |
| Twelve-inch.....                  | 21,022          | .322—      | .94+     | 1.262   |
|                                   | 20,762          | .322—      | .93+     | 1.252   |
| Fifteen-inch.....                 | 4,549           | .385+      | 1.21+    | 1.595   |
| Eighteen-inch.....                | 2,793           | .46+       | 1.26+    | 1.72    |
| Twenty-one-inch.....              | 2,209           | .577+      | 1.47+    | 2.047   |
| Eight-inch connections.....       | 1,747           | .706+      | 1.596+   | 2.362   |
| Ten-inch connections.....         | 63              | .222+      | .854+    | 1.076   |
| Twelve-inch connections.....      | 977             | .29—       | .816+    | 1.106   |
| Fifteen-inch connections.....     | 3,055           | .322—      | .93+     | 1.252   |
| Eighteen-inch connections.....    | 561             | .385+      | 1.21+    | 1.595   |
| Twenty-one-inch connections.....  | 423             | .46+       | 1.26+    | 1.72    |
| Twenty-four-inch connections..... | 36              | .577+      | 1.47+    | 2.047   |
| Basins.....                       | 33              | .706+      | 1.596+   | 2.362   |
|                                   | 166             | 18.287+    | 16.18+   | 34.467  |

NOTE.—Figures in heavy-face type show average cost, with jobs of exceptional difficulty omitted.

## REPORT OF THE INSPECTOR OF PLUMBING.

WASHINGTON, D. C., *August 26, 1898.*

SIR: I have the honor to submit herewith the sixteenth annual report of the operations of the division of plumbing inspection, covering the fiscal year ended June 30, 1898. The number of inspections made and recorded comprises a total of 17,550, being a material increase over the work of the previous year. This record comprises 4,853 examinations of existing plumbing; 5,777 inspections of remodeling, extensions, or repairs; 3,274 inspections of plumbing in progress in new buildings; 231 peppermint tests; 928 inspections of gas piping or fixtures; 986 inspections of lead service pipes; 715 sewer taps for connections; 301 new terra-cotta sewer connections laid, and 485 inspections of repairs to existing terra-cotta house sewers.

The volume of clerical work performed is constantly on the increase. In addition to entries made in the record of the inspections above noted, the number of letters and indorsements written and forwarded amounts to 1,653. The distribution of this includes miscellaneous letters, 285; letters to plumbers, 70; orders to repair plumbing, 436, and indorsements on communications to the number of 800. The letters to the Engineer Commissioner originating in this office number 59, in addition to reports of special character, such as a detailed statement of plumbing repairs required in certain public schools, the result of an examination of plumbing in a public school building in Baltimore, a plan and estimate for a system of sewage disposal for the Industrial Home School, and an opinion respecting the practicability of examining and certifying journeymen plumbers.

After consideration of the best method of serving renewed notices to make plumbing repairs, which had heretofore been done through the police department, it was determined that such service should hereafter be personally made by a representative of this office. The number of notices in which personal service was made by this office is 10. This work was done by the sewer tappers in addition to their other duties.

The examination of plans for plumbing proposed in new buildings or in connection with permits for repairs to work in existing buildings has not varied greatly from that of the previous year, the number of plans for new buildings examined and approved having been 745 as compared with 721 in the previous year.

The decision made by the Commissioners, and embodied in the building regulations, not to allow the addition of frame bathroom structures to existing brick buildings is an advance over the previous practice, fully justified by the greater protection afforded piping lines and fixtures located in additions built with brick walls.

It is gratifying to be able to note the accomplishment of additional legislation, approved June 18, 1898, which has resulted in formal authorization of the plumbing board with five members, in the provision of compensation of this board, in the definite restriction of plumbing and gas fitting to licensed plumbers and gas fitters, and in clear requirements rendering it unlawful to make cuts or trenches in public spaces without a permit from the Commissioners. No opposition was encountered in the passage of the act in question, excepting through the desire of the journeymen plumbers to provide for examination and certification for their craft. It is believed that such restrictive measures as are proposed by them will be necessary in the future, and will result in placing responsibility for defective plumbing work more definitely upon the persons who perform that work.

Attention is invited, as in previous reports, to the absence of authorization for the systematic inspection of gas fixtures and piping in order to note their condition and provide for remedying the defects found. It is believed that the enactment of a law giving the inspector of plumbing and his assistants, under the direction of the Commissioners, suitable power to make periodic inspections of the principal hotels and boarding houses, as to the security of the piping systems and fixtures therein, should be enacted. While it does not appear that during the past year human life has been sacrificed to the cupidity of property owners in allowing the use of improper appliances for the distribution of illuminating gas, the deaths due to such causes noted in the last annual report and in previous reports justify an enlargement of the powers of the Commissioners in this regard. I think it desirable that such legislation as is requested should include suitable authorization of a periodic inspection of plumbing in public buildings and in buildings occupied by numerous residents. The conditions of occupancy, in many cases, introduce such relations with the principal tenant, or agent, or owner that a considerable degree of inconvenience and even known danger from imperfect plumbing appliances do not result in complaint of these imperfections to the proper authorities.

The validity of the plumbing statute and of the regulations made thereunder has not yet been decided in the higher courts of the District, but has been repeatedly sustained in numerous prosecutions in the police court during the past year. In most of these cases it has been the policy of the prosecuting attorney to accept personal bonds or allow a continuance of the case where the defendant would agree to make the repairs directed within a specified period. Eight cases were tried, in five

of which the requirements made by the Commissioners were complied with within the time limit set by the court. A fine of \$25 was imposed in each of three cases, two of which were for failures to remedy defects in terra-cotta house sewers, and one for the construction of a light cast-iron stack in violation of the regulations.

An examination was made by me on September 11, 1897, in cooperation with Mr. Frank Vermillion, of the office of the inspector of buildings, of the recently completed plumbing in Colored School No. 10, Baltimore, Md. The building was found to be a model one, and its appointments in many respects exceedingly satisfactory. The type of architecture, consisting of three stories of six rooms each, with two transverse halls, is quite different from that in use in the District, but exceedingly compact, allowing heating and ventilating apparatus to be arranged for each group of six rooms in a vertical tier, resulting in increased efficiency. The main closet accommodations of the building, located in the basement, consist of a modified form of the Smead trough closet, flushed from a dumping tank and notable in introducing local ventilation to each of the closet seats. The details of the apparatus are well worked out and means of access for cleaning exceedingly good. The urinal was of the ordinary stall type, with perforations near the bottom of the back slab, allowing ventilation at these points. Teachers' closets of good type were also provided in the basement and sinks located on the different floors of the building. As a result of this inspection it was recommended to the Commissioners that a modified type of such closet apparatus, provided with enameled surfaces, be introduced for trial in one of the buildings under construction in the District, and this form of closet is now being installed in the Peabody Annex School.

The efficiency of the force of assistants was maintained at a high standard. The place vacated by the enlistment of Maj. Richard A. O'Brien in the volunteer service was filled by the temporary appointment on May 24 of Martin T. Conboy.

Very respectfully,

CHAS. B. BALL,  
*Inspector of Plumbing.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,*  
*Engineer Commissioner District of Columbia.*  
(Through the Superintendent of Sewers.)

#### REPORT OF THE SUPERINTENDENT OF PROPERTY.

WASHINGTON, September 21, 1898.

SIR: I have the honor to submit herewith a statement (Table A) showing the amount and cost of the various construction materials which were purchased and delivered in the property yards of the District of Columbia during the fiscal year ending June 30, 1898; also a statement (Table B) showing the amounts in detail paid the employees of this department (other than those carried on the annual pay roll), and the appropriations from which they were paid.

Respectfully,

C. T. SHOEMAKER,  
*Superintendent of Property.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,*  
*Engineer Commissioner District of Columbia.*

TABLE A.—Showing construction materials purchased from appropriations for 1897–98.

|                                                    | Granite curbing. |                  | Asphalt block. |                  | Asphalt tiles. |               | Vitrified paving block. |                  |
|----------------------------------------------------|------------------|------------------|----------------|------------------|----------------|---------------|-------------------------|------------------|
|                                                    | Feet.            | Cost.            | Num-ber.       | Cost.            | Num-ber.       | Cost.         | Num-ber.                | Cost.            |
| Cleaning and repairing sewers and basins.....      | 24,254.79        | \$13,604.39      | 1,480          | \$84.52          |                |               | 40                      | \$0.80           |
| Assessment and permit work.....                    | 25,161.96        | 13,106.93        | 493,418        | 28,325.84        | 3,270          | \$171.67      | 974,026                 | 19,130.34        |
| Improvements and repairs.....                      |                  |                  | 1,500          | 89.25            |                |               | 210,079                 | 4,201.58         |
| Current repairs, streets, avenues, and alleys..... | 83.57            | 58.50            | 8,680          | 489.40           |                |               | 17,558                  | 351.16           |
| Repairs, concrete pavements.....                   | 2,590.85         | 1,269.74         |                |                  |                |               | 121,535                 | 2,430.70         |
| Deposit and assessment fund.....                   | 37.51            | 25.25            | 3,000          | 167.50           |                |               | 3,750                   | 75.00            |
| Pumping expenses and pipe distribution.....        |                  |                  | 2,225          | 133.49           |                |               | 1,200                   | 24.00            |
| Replacing sidewalks and curbs.....                 | 1,266.25         | 782.85           |                |                  |                |               |                         |                  |
| Construction of county roads.....                  | 8,782.92         | 4,562.68         |                |                  |                |               | 125,245                 | 2,504.90         |
| <b>Total .....</b>                                 | <b>62,177.85</b> | <b>33,410.34</b> | <b>510,403</b> | <b>29,290.00</b> | <b>3,270</b>   | <b>171.67</b> | <b>1,453,433</b>        | <b>28,713.48</b> |



TABLE A.—Showing construction materials purchased from appropriations for 1897-98—  
Continued.

|                                                                          | Vitrified sewer brick. |          | Vitrified invert blocks. |          | Red paving brick. |            | Red sewer brick. |            |
|--------------------------------------------------------------------------|------------------------|----------|--------------------------|----------|-------------------|------------|------------------|------------|
|                                                                          | Num-ber.               | Cost.    | Feet.                    | Cost.    | Num-ber.          | Cost.      | Num-ber.         | Cost.      |
| Main and pipe sewers .....                                               | 50,000                 | \$775.00 | 2,500                    | \$950.00 | .....             | .....      | 377,766          | \$2,641.58 |
| Suburban sewers .....                                                    | 84,041                 | 1,302.00 | 3,640                    | 1,409.40 | .....             | .....      | 62,350           | 468.38     |
| Replacing obstructed sewers ..                                           | .....                  | .....    | .....                    | .....    | .....             | .....      | 55,050           | 382.41     |
| Cleaning and repairing sewers and basins .....                           | 24,400                 | 378.20   | .....                    | .....    | .....             | .....      | 122,499          | 862.52     |
| Assessment and permit work ..                                            | .....                  | .....    | .....                    | .....    | 488,498           | \$4,023.07 | 182,150          | 1,305.70   |
| Tiber Creek and New Jersey avenue high level intercepting sewer .....    | 136,628                | 2,101.03 | .....                    | .....    | .....             | .....      | .....            | .....      |
| Current repairs, streets, avenues, and alleys .....                      | .....                  | .....    | .....                    | .....    | 119,333           | 954.66     | .....            | .....      |
| Deposit and assessment fund ..                                           | .....                  | .....    | .....                    | .....    | 3,200             | 239.00     | .....            | .....      |
| Automatic flushing tanks .....                                           | .....                  | .....    | .....                    | .....    | .....             | .....      | 6,600            | 47.41      |
| Pumping expenses and pipe distribution .....                             | .....                  | .....    | .....                    | .....    | 4,500             | 360.00     | .....            | .....      |
| Construction and repairs of bridges .....                                | .....                  | .....    | .....                    | .....    | .....             | .....      | 31,000           | 260.13     |
| Completing heating station, hospital department, Washington Asylum ..... | .....                  | .....    | .....                    | .....    | .....             | .....      | 10,000           | 72.30      |
| F street and Easbys Point intercepting sewer .....                       | .....                  | .....    | .....                    | .....    | .....             | .....      | 16,900           | 117.11     |
| Rock Creek and B street intercepting sewer .....                         | .....                  | .....    | .....                    | .....    | .....             | .....      | 9,600            | 66.53      |
| Total .....                                                              | 295,069                | 4,556.23 | 6,140                    | 2,359.40 | 615,531           | 5,576.73   | 873,915          | 6,224.07   |

|                                                                       | Sewer pipe. |            | Portland cement. |          | Natural cement. |            | Paving sand. |          |
|-----------------------------------------------------------------------|-------------|------------|------------------|----------|-----------------|------------|--------------|----------|
|                                                                       | Feet.       | Cost.      | Barrels.         | Cost.    | Barrels.        | Cost.      | Cubic yards. | Cost.    |
| Main and pipe sewers .....                                            | 13,185      | \$2,746.59 | 246              | \$458.32 | 3,500           | \$2,169.79 | 715          | \$157.30 |
| Suburban sewers .....                                                 | 17,019      | 4,606.22   | 236              | 439.15   | 2,727           | 1,690.94   | 48           | 10.61    |
| Replacing obstructed sewers ..                                        | 16,952      | 2,978.96   | 30               | 55.80    | 1,750           | 1,085.00   | .....        | .....    |
| Cleaning and repairing sewers and basins .....                        | 2,948       | 613.10     | 118              | 220.81   | 858             | 531.96     | .....        | .....    |
| Assessment and permit work ..                                         | 28,413      | 3,748.21   | 1,064            | 1,992.53 | 3,164           | 1,961.79   | 2,955        | 650.14   |
| Tiber Creek and New Jersey avenue high level intercepting sewer ..... | 780         | 31.98      | 296              | 555.12   | 4,344           | 2,690.49   | .....        | .....    |
| Improvements and repairs .....                                        | .....       | .....      | .....            | .....    | .....           | .....      | 63           | 13.86    |
| Current repairs, streets, avenues, and alleys .....                   | .....       | .....      | .....            | .....    | .....           | .....      | 1,005        | 221.03   |
| Deposit and assessment fund ..                                        | .....       | .....      | 54               | 100.44   | 3,890           | 2,411.80   | 73           | 16.01    |
| Automatic flushing tanks .....                                        | .....       | .....      | .....            | .....    | 65              | 40.30      | .....        | .....    |
| Repairs, county roads .....                                           | 90          | 10.80      | 8                | 14.88    | 121             | 75.02      | .....        | .....    |
| Pumping expenses and pipe distribution .....                          | 348         | 14.86      | 58               | 107.88   | 160             | 99.20      | 234          | 51.48    |
| Replacing sidewalks and curbs ..                                      | .....       | .....      | .....            | .....    | 4               | 2.48       | .....        | .....    |
| Construction and repairs of bridges .....                             | .....       | .....      | 10               | 18.60    | 291             | 180.42     | .....        | .....    |
| Fire department .....                                                 | 120         | 45.06      | 146              | 271.56   | 272             | 168.04     | .....        | .....    |
| Schools .....                                                         | .....       | .....      | 22               | 40.92    | 710             | 418.00     | .....        | .....    |
| Construction of county roads ..                                       | 579         | 270.48     | .....            | .....    | .....           | .....      | .....        | .....    |
| Total .....                                                           | 80,434      | 15,066.26  | 2,288            | 4,276.01 | 21,856          | 13,526.73  | 5,093        | 1,120.43 |

## 118 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

TABLE A.—Showing construction materials purchased from appropriations for 1897–98—Continued.

|                                                         | Concrete sand. |          | Screened sand. |          | Pebbles.     |          | Siphons. |          |
|---------------------------------------------------------|----------------|----------|----------------|----------|--------------|----------|----------|----------|
|                                                         | Cubic yards.   | Cost.    | Cubic yards.   | Cost.    | Cubic yards. | Cost.    | Num-ber. | Cost.    |
| Main and pipe sewers.....                               |                |          | 325            | \$194.80 | 1,484        | \$667.87 |          |          |
| Suburban sewers.....                                    | 505            | \$196.95 | 59             | 35.20    | 400          | 180.00   |          |          |
| Replacing obstructed sewers ..                          | 876            | 341.64   | 62             | 37.20    | 764          | 343.87   |          |          |
| Cleaning and repairing sewers<br>and basins.....        |                |          | 175            | 105.05   | 407          | 183.15   |          |          |
| Assessment and permit work.....                         | 1,342          | 523.90   | 160            | 96.30    | 2,522        | 1,135.01 |          |          |
| Improvements and repairs.....                           | 7              | 2.73     |                |          |              |          |          |          |
| Current repairs, streets, ave-<br>nues, and alleys..... |                |          | 27             | 16.20    | 629          | 283.35   |          |          |
| Deposit and assessment fund.....                        | 1,872          | 732.00   | 9              | 5.40     | 91           | 40.95    |          |          |
| Automatic flushing tanks .....                          |                |          | 6              | 3.60     | 31           | 14.17    | 6        | \$168.00 |
| Repairs, county roads.....                              |                |          | 3              | 2.10     | 400          | 180.00   |          |          |
| Pumping expenses and pipe<br>distribution.....          | 14             | 5.46     | 110            | 66.00    |              |          |          |          |
| Replacing sidewalks and curbs.....                      | 1              | .39      |                |          | 3            | 1.20     |          |          |
| Construction and repairs of<br>bridges.....             |                |          | 8              | 4.80     |              |          |          |          |
| Fire department.....                                    | 15             | 5.85     |                |          | 30           | 13.50    |          |          |
| Total .....                                             | 4,632          | 1,808.92 | 944            | 566.65   | 6,761        | 3,043.07 | 6        | 168.00   |

|                                                  | Boston sewer<br>traps. |         | Bluestone traps. |          | Water-stopcock<br>boxes. |          | Lamp-posts. |            |
|--------------------------------------------------|------------------------|---------|------------------|----------|--------------------------|----------|-------------|------------|
|                                                  | Num-ber.               | Cost.   | Num-ber.         | Cost.    | Num-ber.                 | Cost.    | Num-ber.    | Cost.      |
| Cleaning and repairing sewers<br>and basins..... | 10                     | \$60.00 | 45               | \$790.50 |                          |          |             |            |
| Assessment and permit work.....                  |                        |         |                  |          | 400                      | \$182.00 |             |            |
| Lighting .....                                   |                        |         |                  |          |                          |          | 399         | \$1,971.06 |
| Total .....                                      | 10                     | 60.00   | 45               | 790.50   | 400                      | 182.00   | 399         | 1,971.06   |

|                                                                                 | Castings.           |                     |        |                                | Services. | Total.   |             |
|---------------------------------------------------------------------------------|---------------------|---------------------|--------|--------------------------------|-----------|----------|-------------|
|                                                                                 | Man-hole<br>frames. | Man-hole<br>covers. | Steps. | Alley<br>grates and<br>frames. |           |          |             |
| Main and pipe sewers.....                                                       | 132                 | 267                 | 1,000  |                                | \$749.55  | \$510.75 | \$12,021.55 |
| Suburban sewers.....                                                            | 67                  | 67                  | 500    |                                | 314.91    | 652.50   | 11,306.26   |
| Replacing obstructed sewers .....                                               | 55                  | 103                 | 200    |                                | 302.18    | 245.25   | 5,772.31    |
| Cleaning and repairing sewers<br>and basins.....                                | 52                  | 124                 |        | 47                             | 595.35    | 426.35   | 4,852.31    |
| Assessment and permit work.....                                                 | 167                 | 294                 | 1,010  |                                | 939.69    | 2,240.00 | 80,030.58   |
| Tiber Creek and New Jersey<br>avenue high level intercept-<br>ing sewer.....    | 3                   | 3                   |        |                                |           |          |             |
| Improvements and repairs.....                                                   |                     |                     |        |                                | 32.68     | 510.40   | 5,921.70    |
| Current repairs, streets, ave-<br>nues, and alleys.....                         |                     |                     |        |                                |           | 683.00   | 18,097.35   |
| Repairs, concrete pavements.....                                                |                     |                     |        |                                |           |          | 2,374.30    |
| Deposit and assessment fund.....                                                |                     |                     |        |                                |           | 166.25   | 3,866.69    |
| Automatic flushing tanks .....                                                  | 3                   | 3                   | 25     |                                | 14.12     |          | 3,813.35    |
| Repairs, county roads.....                                                      |                     |                     |        |                                |           |          | 287.60      |
| Pumping expenses and pipe<br>distribution.....                                  |                     |                     |        |                                |           | 48.00    | 330.80      |
| Replacing sidewalks and curbs.....                                              |                     |                     |        |                                |           |          | 862.37      |
| Construction and repairs of<br>bridges.....                                     |                     |                     |        |                                |           |          | 786.92      |
| Fire department.....                                                            |                     |                     |        |                                |           | 42.00    | 505.95      |
| Schools.....                                                                    |                     |                     |        |                                |           |          | 504.61      |
| Construction of county roads.....                                               |                     |                     |        |                                |           |          | 459.82      |
| Completing heating station,<br>hospital department, Wash-<br>ington Asylum..... |                     |                     |        |                                |           | 254.95   | 7,593.01    |
| F street and Easbys Point in-<br>tercepting sewer.....                          |                     |                     |        |                                |           |          | 72.30       |
| Rock Creek and B street in-<br>tercepting sewer.....                            |                     |                     |        |                                |           | 608.73   | 725.84      |
| Lighting.....                                                                   |                     |                     |        |                                |           | 923.86   | 990.39      |
| Total .....                                                                     | 479                 | 861                 | 2,735  | 47                             | 2,948.48  | 7,312.04 | 163,147.07  |

TABLE B.—Showing list of employees, other than those on per annum roll, and amounts paid to each.

| Name and occupation.                        | Wages.  | Sewers.        |           |                       |                                           |                                                            |                            |                                       |
|---------------------------------------------|---------|----------------|-----------|-----------------------|-------------------------------------------|------------------------------------------------------------|----------------------------|---------------------------------------|
|                                             |         | Main and pipe. | Suburban. | Replacing obstructed. | Cleaning and repairing sewers and basins. | Tiber Creek and New Jersey avenue high level intercepting. | F street and Esabys Point. | Rock Creek and B street intercepting. |
| L. T. Boiseau, superintendent of property   | \$4. 75 | \$114. 00      | \$123. 50 | \$52. 25              | \$61. 75                                  | \$66. 50                                                   | \$128. 25                  | \$185. 25                             |
| C. T. Shoemaker, superintendent of property | 4. 00   |                |           |                       | 52. 00                                    |                                                            |                            |                                       |
| W. J. W. Grey, clerk                        | 3. 00   | 75. 00         | 78. 00    | 33. 00                | 75. 00                                    | 81. 00                                                     | 81. 00                     | 117. 00                               |
| C. T. Shoemaker, clerk                      | 2. 50   |                |           |                       |                                           |                                                            |                            |                                       |
| W. H. Edgar, clerk                          | 2. 50   | 60. 00         | 65. 00    | 25. 00                | 30. 00                                    | 35. 00                                                     | 60. 00                     | 92. 50                                |
| H. M. Spencer, clerk                        | 2. 50   |                |           |                       | 32. 50                                    |                                                            |                            |                                       |
| J. E. Payne, clerk                          | 4. 00   |                |           |                       |                                           |                                                            |                            |                                       |
| C. J. F. Peirce, clerk                      | 2. 50   |                |           |                       |                                           |                                                            |                            |                                       |
| Wm. Donaldson, inspector                    | 4. 00   | 52. 00         | 160. 00   | 44. 00                | 52. 00                                    | 108. 00                                                    | 108. 00                    | 156. 00                               |
| Jno. Pearce, inspector                      | 3. 00   |                | 15. 00    |                       |                                           |                                                            |                            |                                       |
| J. N. Clarkson, inspector                   | 2. 50   |                |           |                       |                                           |                                                            |                            |                                       |
| W. H. Voss, storekeeper and inspector       | 3. 00   | 75. 00         | 78. 00    | 33. 00                | 39. 00                                    | 81. 00                                                     | 81. 00                     | 117. 00                               |
| H. M. Dickinson, storekeeper and inspector  | 3. 00   | 75. 00         | 78. 00    | 33. 00                | 39. 00                                    | 81. 00                                                     | 78. 50                     | 117. 00                               |
| Geo. E. Clark, storekeeper and inspector    | 2. 50   |                |           |                       | 12. 50                                    |                                                            |                            |                                       |
| Chas. Baluff, stonecutter                   | 4. 50   |                |           |                       |                                           |                                                            |                            |                                       |
| Edward Morris, messenger clerk              | 2. 00   | 50. 00         | 52. 00    | 22. 00                | 26. 00                                    | 54. 00                                                     | 54. 00                     | 78. 00                                |
| C. T. Shoemaker, laborer                    | 1. 75   |                |           |                       |                                           |                                                            |                            |                                       |
| Laborers                                    | 1. 50   | 9. 75          | 3. 00     | 3. 00                 | 6. 60                                     | 3. 90                                                      | 17. 98                     | 61. 11                                |
| Total                                       |         | 510. 75        | 652. 50   | 245. 25               | 426. 35                                   | 510. 40                                                    | 608. 73                    | 923. 86                               |

| Name and occupation.                        | Wages.  |                           |                             |                                |                               |                                       |                                     | Total.       |
|---------------------------------------------|---------|---------------------------|-----------------------------|--------------------------------|-------------------------------|---------------------------------------|-------------------------------------|--------------|
|                                             |         | Improvements and repairs. | Assessment and permit work. | Repairs to concrete pavements. | Construction of county roads. | Connecticut avenue and Columbia road. | Construction and repair of bridges. |              |
| L. T. Boiseau, superintendent of property   | \$4. 75 | \$123. 50                 | \$437. 00                   |                                |                               |                                       |                                     | \$1, 292. 00 |
| C. T. Shoemaker, superintendent of property | 4. 00   |                           |                             | \$28. 00                       | \$52. 00                      |                                       |                                     | 132. 00      |
| W. J. W. Grey, clerk                        | 3. 00   | 78. 00                    | 276. 00                     |                                |                               | \$42. 00                              |                                     | 936. 00      |
| C. T. Shoemaker, clerk                      | 2. 50   | 62. 50                    | 135. 00                     |                                |                               |                                       |                                     | 197. 50      |
| W. H. Edgar, clerk                          | 2. 50   |                           | 53. 75                      | 15. 00                         |                               |                                       |                                     | 436. 25      |
| H. M. Spencer, clerk                        | 2. 50   |                           |                             | 11. 25                         | 43. 50                        |                                       |                                     | 87. 25       |
| J. E. Payne, clerk                          | 3. 50   |                           |                             |                                |                               |                                       |                                     |              |
| J. E. Payne, clerk                          | 4. 00   |                           | 6. 00                       |                                |                               |                                       |                                     | 6. 00        |
| C. J. F. Peirce, clerk                      | 2. 50   | 30. 00                    | 2. 50                       |                                |                               |                                       |                                     | 32. 50       |
| Wm. Donaldson, inspector                    | 4. 00   | 104. 00                   | 368. 00                     |                                | 52. 00                        |                                       | \$48. 00                            | 1, 252. 00   |
| Jno. Pearce, inspector                      | 3. 00   |                           |                             |                                |                               |                                       |                                     | 15. 00       |
| J. N. Clarkson, inspector                   | 2. 50   |                           | 5. 00                       |                                |                               |                                       |                                     | 5. 00        |
| W. H. Voss, storekeeper and inspector       | 3. 00   | 78. 00                    | 276. 00                     | 42. 00                         | 39. 00                        |                                       |                                     | 939. 00      |
| H. M. Dickinson, storekeeper and inspector  | 3. 00   | 78. 00                    | 276. 00                     | 42. 00                         | 39. 00                        |                                       |                                     | 936. 50      |
| Geo. E. Clark, storekeeper and inspector    | 2. 50   | 62. 50                    | 175. 00                     |                                |                               |                                       |                                     | 250. 00      |
| Chas. Baluff, stonecutter                   | 4. 50   |                           |                             |                                |                               | \$0. 45                               |                                     | . 45         |
| Edward Morris, messenger clerk              | 2. 00   | 52. 00                    | 184. 00                     | 28. 00                         | 26. 00                        |                                       |                                     | 626. 00      |
| C. T. Shoemaker, laborer                    | 1. 75   |                           | 21. 00                      |                                |                               |                                       |                                     | 21. 00       |
| Laborers                                    | 1. 50   | 14. 50                    | 24. 75                      |                                | 3. 00                         |                                       |                                     | 147. 59      |
| Total                                       |         | 683. 00                   | 2, 240. 00                  | 166. 25                        | 254. 50                       | . 45                                  | 42. 00                              | 7, 312. 04   |

## REPORT OF THE INSPECTOR OF ASPHALT AND CEMENTS.

WASHINGTON, *August 1st, 1898.*

SIR: The work of testing done in this office during the year may be summarized as follows:

|                                              |       |       |
|----------------------------------------------|-------|-------|
| Hydraulic cement:                            |       |       |
| Natural, brands 5, samples .....             | 6,068 |       |
| Portland, brands 12, samples .....           | 2,318 |       |
|                                              |       | 8,386 |
| Asphalts:                                    |       |       |
| Crude Trinidad, three cargoes, samples ..... | 20    |       |
| Refined Trinidad, samples .....              | 3     |       |
| Residuum oils .....                          | 32    |       |
| Surface mixture .....                        | 109   |       |
| Miscellaneous asphalts .....                 | 15    |       |
|                                              |       | 179   |
| Sands .....                                  | 9     |       |
| Gravels .....                                | 14    |       |
| Waters .....                                 | 71    |       |
| Gasoline .....                               | 5     |       |
| Miscellaneous experiments, etc .....         | 16    |       |
|                                              |       | 115   |
| Total .....                                  |       | 8,680 |

## HYDRAULIC CEMENTS.

The number of barrels inspected and the average results of tests of each brand of cement will be found in the following tables:

## NATURAL CEMENTS.

The 6,068 samples of natural cement represent 61,344 barrels, of which 2,173 were rejected.

TABLE A.—*Natural cements.*

| Brand.                       | Number of barrels. | Number of samples. | Per cent residue, 100 mesh. | Initial set, minutes. | Per cent water used. |               | Temperature of air and water. | Tensile strength. |               |                |                       |                        |
|------------------------------|--------------------|--------------------|-----------------------------|-----------------------|----------------------|---------------|-------------------------------|-------------------|---------------|----------------|-----------------------|------------------------|
|                              |                    |                    |                             |                       | Neat.                | 2 parts sand. |                               | 1 day, neat.      | 7 days, neat. | 28 days, neat. | 7 days, 2 parts sand. | 28 days, 2 parts sand. |
|                              |                    |                    |                             |                       |                      |               |                               |                   |               |                |                       |                        |
| Cumberland .....             | 19,700             | 1,722              | 14.2                        | 30.6                  | 30.6                 | 14.1          | 75.7                          | 134               | 247.8         | .....          | 137.4                 | .....                  |
| Cumberland and Potomac ..... | 3,676              | 369                | 17                          | 31.6                  | 30.7                 | 14.5          | 77.3                          | 133               | 259           | .....          | 167.6                 | .....                  |
| Lawrenceville .....          | 5,300              | 530                | 7.1                         | 47                    | 25.3                 | 12.8          | 80.4                          | 127               | 205           | .....          | 100.6                 | .....                  |
| Potomac .....                | 29,727             | 3,162              | 13.1                        | 23.1                  | 28.2                 | 13.8          | 73.7                          | 72.8              | 134.5         | 280            | 70.1                  | 199.4                  |
| Round Top .....              | 2,941              | 286                | 13.8                        | 32.4                  | 31                   | 14.3          | 76.1                          | 109               | 195           | .....          | 142.7                 | .....                  |

## PORTLAND CEMENTS.

The 2,318 samples of Portland cements represent 22,695 barrels, of which 400 were rejected.

TABLE B.—*Portland cements.*

| Brand.                  | Number of barrels. | Number of samples. | Per cent residue, 100 mesh. | Initial set. | Per cent water used. |               | Temperature of air and water. | Tensile strength. |               |                       |
|-------------------------|--------------------|--------------------|-----------------------------|--------------|----------------------|---------------|-------------------------------|-------------------|---------------|-----------------------|
|                         |                    |                    |                             |              | Neat.                | 3 parts sand. |                               | 1 day, neat.      | 7 days, neat. | 7 days, 3 parts sand. |
|                         |                    |                    |                             |              |                      |               |                               |                   |               |                       |
| Alpha .....             | 1                  | 10                 | 6                           | 4            | 20                   | 10            | 78                            | 216               | 785           | 308                   |
| Atlas .....             | 7,450              | 745                | 5.6                         | 3 41         | 18.1                 | 8.5           | 75                            | 438               | 725           | 234.2                 |
| Brooks Shoobridge ..... | 100                | 10                 | 6                           | 3 22         | 20                   | 10            | 78                            | 400               | 597           | 215                   |
| Dyckerhoff .....        | 400                | 40                 | 6                           | 4            | 18.1                 | 9             | 70                            | 371               | 564           | 155                   |
| Griffith .....          | 100                | 10                 | 15                          | 5            | 20                   | 9             | 78                            | 231               | 409           | 140                   |
| Heyn .....              | 2,310              | 230                | 8.2                         | 3 15         | 19.5                 | 9.7           | 78                            | 484               | 628           | 219                   |
| Knickerbocker .....     | 1                  | 10                 | 1                           | 5            | 20                   | 10            | 78                            | 220               | 506           | 224                   |
| Pataasco .....          | 1                  | 10                 | 1                           | 6            | 17                   | 8             | 70                            | 281               | 481           | 231                   |
| Porta .....             | 500                | 50                 | 7.2                         | 1 20         | 19                   | 8.2           | 83                            | 395.6             | 518.6         | 157.8                 |
| Saylor .....            | 1                  | 10                 | 5                           | 5            | 19                   | 9             | 79                            | 454               | 678           | 239                   |
| Taltie .....            | 1                  | 10                 | 1                           | 6            | 16                   | 8             | 70                            | 244               | 638           | 176                   |
| Vulcanite .....         | 11,830             | 1,183              | 6.4                         | 3 6          | 19.3                 | 9.5           | 73                            | 304.2             | 767           | 269                   |

LONG-TIME TESTS ON NATURAL AND PORTLAND CEMENTS.

It should be understood that the tests given in the following tables are not supposed to show the relative strength of the different brands, but merely to exhibit the relative gain in strength with age. It can readily be seen by consulting the tables of average tests on cements in this and former reports that some of the samples of cement used in making up these tests are below, while others are above, the average of their respective brands. In collecting these samples we endeavored to get as near an average sample as possible by mixing samples taken from a number of barrels.

TABLE C.

| Brand of natural cement.                       | Per cent of water. |               | Temperature of— |        | Tensile strength. |         |                 |          |          |          |           |           |
|------------------------------------------------|--------------------|---------------|-----------------|--------|-------------------|---------|-----------------|----------|----------|----------|-----------|-----------|
|                                                | Neat.              | 2 parts sand. | Air.            | Water. | Neat.             |         | 2 parts quartz. |          |          |          |           |           |
|                                                |                    |               |                 |        | 1 day.            | 7 days. | 7 days.         | 14 days. | 21 days. | 1 month. | 2 months. | 3 months. |
| Antietam.....                                  | 32                 | 15            | 89              | 88     | 62                | 168     | 48              | 103      | 110      | 124      | 158       | 162       |
| Black Diamond.....                             | 29                 | 14            | 80              | 80     | 81                | 162     | 83              | .....    | .....    | 126      | 185       | 212       |
| Cedar Cliff.....                               | 33                 | 15            | 90              | 90     | 88                | 185     | 85              | 145      | 152      | 195      | 252       | 255       |
| Cumberland.....                                | 32                 | 15            | 90              | 91     | 169               | 218     | 156             | 208      | 290      | 297      | 307       | 356       |
| Cumberland and Potomac.....                    | 32                 | 15            | 91              | 91     | 146               | 204     | 188             | 196      | 220      | 225      | 315       | 403       |
| Lawrenceville.....                             | .....              | 13            | 70              | 70     | .....             | .....   | 84              | 102      | 133      | 148      | 206       | 278       |
| Shepherdstown.....                             | 31                 | 14            | 91              | 92     | 61                | 145     | 106             | 144      | 161      | 210      | 227       | 265       |
| Union, mixed with 3 parts quartz.....          | 22                 | 10            | 76              | 75     | 94                | 130     | 74              | 93       | 160      | 181      | 194       | 236       |
| Improved Union, mixed with 3 parts quartz..... | 21                 | 10            | 70              | 68     | 102               | 116     | 95              | .....    | .....    | 132      | 178       | 162       |
| Round Top.....                                 | 32                 | 14            | 90              | 90     | 81                | 203     | 122             | 188      | 233      | 255      | 305       | 342       |

| Brand of natural cement.                       | Tensile strength. |           |           |           |           |           |            |            |         |          |          |          |
|------------------------------------------------|-------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|---------|----------|----------|----------|
|                                                | 2 parts quartz.   |           |           |           |           |           |            |            |         |          |          |          |
|                                                | 4 months.         | 5 months. | 6 months. | 7 months. | 8 months. | 9 months. | 10 months. | 11 months. | 1 year. | 2 years. | 3 years. | 4 years. |
| Antietam.....                                  | 161               | 173       | 185       | 180       | 188       | 203       | 228        | 230        | 231     | 240      | 246      | .....    |
| Black Diamond.....                             | 305               | .....     | .....     | .....     | .....     | .....     | .....      | .....      | .....   | .....    | .....    | .....    |
| Cedar Cliff.....                               | 236               | 270       | 290       | 309       | 290       | 298       | 304        | 346        | 364     | 384      | 385      | 312      |
| Cumberland.....                                | 366               | 357       | 350       | 355       | 416       | 406       | 429        | 434        | 438     | 446      | 441      | 424      |
| Cumberland and Potomac.....                    | 388               | 384       | 397       | 394       | 406       | 388       | 423        | 428        | 436     | 490      | 506      | 500      |
| Lawrenceville.....                             | 290               | 293       | 291       | 293       | 290       | 288       | 295        | 293        | 321     | .....    | .....    | .....    |
| Shepherdstown.....                             | 283               | 272       | 281       | 305       | 321       | 300       | 301        | 315        | 366     | 356      | 337      | 362      |
| Union, mixed with 3 parts quartz.....          | 240               | 244       | 238       | 257       | 262       | 267       | 272        | 306        | 312     | 364      | 344      | .....    |
| Improved Union, mixed with 3 parts quartz..... | 198               | 226       | 232       | 258       | 276       | 289       | 295        | 331        | 322     | 326      | 283      | .....    |
| Round Top.....                                 | 371               | 378       | 387       | 383       | 413       | 428       | 444        | 551        | 515     | 561      | 566      | 514      |

TABLE D.

| Brand of Portland cement.         | Per cent of water. |                 | Temperature of— |        | Tensile strength. |         |                 |          |           |           |           |
|-----------------------------------|--------------------|-----------------|-----------------|--------|-------------------|---------|-----------------|----------|-----------|-----------|-----------|
|                                   |                    |                 |                 |        | Neat.             |         | 3 parts quartz. |          |           |           |           |
|                                   | Neat.              | 3 parts quartz. | Air.            | Water. | 1 day.            | 7 days. | 7 days.         | 1 month. | 2 months. | 3 months. | 4 months. |
| Alpha .....                       | 21                 | 9               | 80              | 80     | .....             | .....   | 105             | 182      | 310       | 309       | 310       |
| Alsen .....                       | 20                 | 10              | 70              | 65     | 292               | 635     | 188             | 310      | 290       | 328       | 385       |
| Atlas .....                       | 20                 | 10              | 90              | 90     | 432               | 768     | 321             | 441      | 441       | 510       | 519       |
| Dufosse & Henry .....             | 20                 | 10              | 70              | 70     | 149               | 546     | 159             | 188      | 229       | 277       | 300       |
| Dyckerhoff .....                  | 21                 | 10              | 70              | 70     | 345               | 566     | 164             | 175      | 192       | 236       | 257       |
| Egypt .....                       | 20                 | 10              | 68              | 65     | 188               | 278     | 159             | 205      | 255       | 240       | 285       |
| Giant .....                       | 21                 | 11              | 72              | 72     | 160               | 495     | 230             | 275      | 275       | 267       | 296       |
| Hannover .....                    | 20                 | 10              | 68              | 65     | 295               | 571     | 205             | 244      | 251       | 277       | 301       |
| Hennmore .....                    | 20                 | 9               | 78              | 78     | .....             | 496     | 158             | 258      | 281       | 301       | 323       |
| Heyn .....                        | 20                 | 10              | 68              | 68     | .....             | 496     | 158             | 258      | 281       | 301       | 323       |
| Mannheimer .....                  | 20                 | 10              | 78              | 78     | 329               | 525     | 193             | 226      | 306       | 329       | 335       |
| Porta .....                       | 20                 | 10              | 70              | 68     | 407               | 415     | 181             | 257      | 305       | 319       | 315       |
| Saylor .....                      | 20                 | 8               | 82              | 82     | 201               | 461     | 135             | 156      | 205       | 203       | 254       |
| Standard silica cement, 1 to 1 .. | 22                 | 10              | 80              | 80     | 206               | 541     | 216             | 226      | 285       | 319       | 336       |
| Standard silica cement, 1 to 6 .. | 22                 | 10              | 80              | 80     | 21                | 97      | 46              | 89       | 96        | 94        | 108       |
| Vulcanite .....                   | 18                 | 9               | 74              | 74     | .....             | .....   | 211             | 276      | 291       | 297       | 284       |

| Brand of Portland cement.         | Tensile strength. |           |           |           |           |            |            |         |          |          |
|-----------------------------------|-------------------|-----------|-----------|-----------|-----------|------------|------------|---------|----------|----------|
|                                   | 3 parts quartz.   |           |           |           |           |            |            |         |          |          |
|                                   | 5 months.         | 6 months. | 7 months. | 8 months. | 9 months. | 10 months. | 11 months. | 1 year. | 2 years. | 3 years. |
| Alpha .....                       | 295               | 327       | 346       | 284       | 295       | 319        | 345        | 350     | 311      | .....    |
| Alsen .....                       | 380               | 390       | 381       | 379       | 383       | 374        | 377        | 366     | 371      | 359      |
| Atlas .....                       | 529               | 538       | 538       | 515       | 501       | 500        | 572        | 546     | 523      | 496      |
| Dufosse & Henry .....             | 320               | 319       | 316       | 328       | 332       | 335        | 331        | 332     | 335      | 320      |
| Dyckerhoff .....                  | 293               | 298       | 315       | 315       | 332       | 340        | 345        | 323     | 370      | 352      |
| Egypt .....                       | 301               | 341       | 351       | 362       | 360       | 375        | 402        | 394     | 417      | 401      |
| Giant .....                       | 329               | 325       | 351       | 286       | 304       | 300        | 308        | 327     | 342      | 336      |
| Hannover .....                    | 315               | 315       | 311       | 317       | 335       | 340        | 348        | 354     | 355      | 317      |
| Hennmore .....                    | 329               | 314       | 341       | 356       | 345       | 310        | 308        | 347     | 325      | .....    |
| Heyn .....                        | 350               | 341       | 314       | 337       | 358       | 350        | 384        | 396     | .....    | .....    |
| Mannheimer .....                  | 323               | 343       | 342       | 352       | 321       | 341        | 316        | 336     | 334      | .....    |
| Porta .....                       | 322               | 343       | 250       | 275       | 303       | 329        | 339        | 329     | 349      | 310      |
| Saylor .....                      | 277               | 289       | 276       | 264       | 279       | 295        | 282        | 279     | 260      | .....    |
| Standard silica cement, 1 to 1 .. | 564               | 384       | 377       | 377       | 385       | 394        | 387        | 379     | 366      | .....    |
| Standard silica cement, 1 to 6 .. | 127               | 130       | 135       | 146       | 168       | 187        | 183        | 192     | .....    | .....    |
| Vulcanite .....                   | 306               | 331       | 294       | .....     | .....     | .....      | .....      | .....   | .....    | .....    |

## ASPHALTS.

During the year three cargoes of crude Trinidad asphalt were received, from which 20 samples were taken for analyses. The average per cent of bitumen soluble in carbon disulphide was 53.37, and in all other respects found to be up to the standard as specified by this office.

*Refined asphalt.*—Samples of the refined asphalt were taken from the tanks as the different cargoes of crude were refined and sent for examination. All were found to be up to the requirements.

*Residuum oil.*—Of the 32 samples submitted from the different paving companies 4 were rejected.

*Asphalt cements.*—Penetrations of the asphalt cement used by the different companies in each day's work have been taken, with the following results:

|                                   | Barber Paving Co. | Cranford Paving Co. |
|-----------------------------------|-------------------|---------------------|
| Average penetration at 77° F..... | 91                | 83                  |
| Highest penetration at 77° F..... | 98                | 90                  |
| Lowest penetration at 77° F.....  | 90                | 77                  |

*Surface mixture.*—During the year 109 samples were submitted—24 from the Barber Asphalt Paving Company and 85 from the Cranford Paving Company. The following table shows the maximum, minimum, and average per cent bitumen they contained and the mesh composition of the sand used by the different companies:

TABLE E.

|                                      | Barber<br>Paving<br>Co. | Cranford<br>Paving<br>Co. |
|--------------------------------------|-------------------------|---------------------------|
| Number of samples.....               | 24                      | 85                        |
| Average per cent bitumen.....        | 11.3                    | 10.5                      |
| Lowest per cent bitumen.....         | 10.0                    | 9.5                       |
| Highest per cent bitumen.....        | 13.0                    | 12.0                      |
| Sand:                                |                         |                           |
| Per cent retained on sieve having—   |                         |                           |
| 20 mesh per linear inch.....         | 2.5                     | 3.5                       |
| 40 mesh per linear inch.....         | 21.0                    | 29.0                      |
| 60 mesh per linear inch.....         | 35.0                    | 33.0                      |
| 80 mesh per linear inch.....         | 8.5                     | 7.0                       |
| 100 mesh per linear inch.....        | 10.0                    | 8.0                       |
| Passed 100 mesh per linear inch..... | 24.0                    | 19.0                      |

*New asphalts.*—Of the several samples presented during the past year but two are of special interest to paving. They were from the Western Oil and Asphalt Company, of Los Angeles, Cal., and the California Asphaltum Company. The former presented three samples—one of refined, one of asphaltic oil, and one of cement. As I understand, the cement is made by combining the refined with the asphaltic oil. I am of the belief that a good pavement can be constructed with this material. The California Asphaltum Company presented a sample of their asphalt cement. This, I believe, is made in a similar manner to the Pittsburg flux, as described in last year's report, excepting in place of Eastern petroleum residuum California petroleum residuum, or asphaltic oil, is used. It possesses the good qualities of Pittsburg flux—that is, but slightly susceptible to change of temperature—but differs from it in being adhesive instead of waxy, which better adapts it to the use of paving. If properly handled, there is no reason why it should not produce some of the best of pavements.

## SANDS AND GRAVELS.

Nine samples of sand and 14 samples of gravel were submitted for test and comparison, and reports on each were made to the offices from which they were submitted.

## WATER.

Of the 71 samples of water submitted by the water department 20 were condemned. They may be summarized as follows:

|                | Good. | Suspi-<br>cious. | Con-<br>demned. |
|----------------|-------|------------------|-----------------|
| Northeast..... | 4     | 4                | -----           |
| Northwest..... | 5     | 3                | 7               |
| Southeast..... | 15    | 14               | 9               |
| Southwest..... | 1     | 1                | 4               |
| County.....    | 3     | -----            | 1               |

## INVESTIGATIONS.

During the past year an investigation as to whether petroleum residuum is a good softening agent or flux for asphalt has been instituted. In speaking here of petroleum residuum I refer to that manufactured from the petroleum oils of the Eastern United States. It is that portion of the petroleum that remains after the light oils and lubricating oils have been removed by distillation. These residuums are composed largely of the higher members of the paraffin series, with some unsaturated hydrocarbons, and must not be confused with those of the Western and some foreign petroleum which are composed largely of hydrocarbons belonging to unsaturated series and are asphaltic in character. It may be well before proceeding to explain why this point, which appears of little moment, is of sufficient importance to investigate. In the manufacture of asphalt pavements it is often found necessary, on

account of the hardness of the asphalt in use to soften it by the admixture of a softer asphalt or oil. This is the case with all the asphalts used in this city and the large majority of those used throughout the country. In the case of Trinidad asphalt, which is used more extensively than any other, petroleum residuum is used as the softening agent, and for the manufacture of a desirable paving cement on an average of 18 pounds of residuum is mixed with 100 pounds of refined Trinidad asphalt, and when we consider that the refined asphalt is but 56 per cent pure bitumen, it is seen that the bitumen of a Trinidad asphalt cement is composed of 24.32 per cent residuum and 75.68 per cent of asphalt bitumen. When so large a quantity of flux is necessary it is very important that it should possess properties that would suit it for paving purposes, and also that the asphalt bitumen should be completely soluble in it.

On looking into the physical properties of the better petroleum residuums, it is found to be a heavy, thick oil at 70° F., which begins to solidify at 58° F., and becomes solid on cooling to 48° F., this solidification being due to a crystallization of a portion of its constituents. At a temperature of 90° F. it becomes very limpid. It is very nonadhesive in character, and when in a solid condition from cold or other causes it is very waxy in consistency and entirely lacking in cementing properties. As regards its stability, it gradually loses its fluidity with age. This seems rather strange, as it is composed largely of saturated hydrocarbons, and it would be only natural to suppose, from theory, that they would be very stable bodies—much more so than oils composed more largely of unsaturated hydrocarbons. This theory was so ably discussed by Richardson<sup>1</sup> about a year ago that I will not go into it. The theory in question, however, is lacking in this very essential point, that it is not carried out in practice. The truth of this is forcibly illustrated by examining the condition of the samples of residuums which have been submitted by the several paving companies in this city during the past four years. These samples are in quart cans, well corked, and have been kept in a room in which the temperature has seldom gone below 70° F. On examining the samples over six months old, with the temperature of the room at 75° F., a large majority were found to be of the consistency of jelly, some stiffer than others. On examining all the samples over a year old, with the temperature of the room at 90° F. and after a week of warm weather, during which time the temperature had not been below 85° F., out of 40 samples 12 were found in a solid condition. It is hard to account for why this hardening takes place, but it can be induced and made more rapid in many cases by exposing the residuum in small quantities to a moderate heat or an intense cold for a short time. It is apparently caused by the separation from the residuum of a light-brown apparently amorphous solid, which, after having once formed, alters the physical character of the residuum in this respect, that the temperature of its solidifying point is much raised.

On examining a drop of fresh petroleum residuum under the microscope by transmitted light it is found to be an amber-colored fluid with more or less paraffin crystals and a black substance floating through it. This black substance is often mistaken for coke, but it is completely soluble in carbon disulphide, chloroform, and turpentine and insoluble in petroleum naphtha. If this drop of residuum is put aside for several days and then again examined with a microscope, it will be found that another substance has made its appearance in the shape of a light brown amorphous solid which melts at a temperature of about 105° F. The formation of this substance can also be induced by heating a drop of residuum for five minutes at a temperature of 170° F., or by exposing to a temperature of 10° F. or lower, for about half an hour. This latter indicates that this formation is brought about by molecular change rather than by evaporation or oxidation. It is evidently the formation of this solid which causes the residuum to gradually lose its fluidity with age, as before mentioned. By the use of polarized light the large majority of these oils are found to contain minute paraffin crystals, which I find increase largely in size and number after the residuum has been heated to a high temperature for even a short time. On being kept at a high temperature for a length of time (400° F. for thirty hours in closed retort), although they lose but little in distillate yet they are considerably altered in composition and consistency, so much so that it is very evident that the change is not due to the small loss of light oil but to molecular change. In some very few cases the character of the residuum appears to be benefited by this heating, as it is less susceptible to change in temperature than formerly, and when cooled until solid is more cementitious. In these few cases the molecular change above spoken of can not be noticed.

As to the solubility of asphalt bitumen in petroleum residuum, I have devoted all my time so far to Trinidad asphalt, as it is by far the most extensively used here as well as in other cities. As I have before stated, the bitumen of a Trinidad asphalt cement is at least one-fourth petroleum residuum. When so large a quantity of

<sup>1</sup> Municipal Engineering, vol. 13, No. 1, page 1.



softening agent or flux must be used, it is only reasonable to suppose that the best results can not be obtained unless the bitumen of the asphalt is completely soluble in the flux used.

The point as to whether petroleum residuum completely dissolves the bitumen of Trinidad asphalt has been an open question for several years past. Peckham, in 1895, criticises the use of petroleum residuum for this purpose, and states that the asphalt is insoluble in it, but gives no reason for the statement. In an article by myself on specifications for asphalt pavements, written in 1896, I object to the use of residuum for fluxing asphalts, and among other objections I make to it is that I do not believe the asphalt completely soluble in it. This opinion of mine was based on observations made while trying to soften some of the harder asphalts by admixture with residuum. In some cases I found it impossible to dissolve the asphalt in the residuum even after prolonged stirring at a temperature above the melting point of the asphalt, while these same asphalts were easily miscible in Western petroleum residuum having an asphaltic base.

Other circumstances have in the past led me to infer that there was no complete solution, but until the present I have never attempted to make any definite demonstration of the truth of my convictions. About a year ago Richardson, in an article on Solubility of Asphalt Hydrocarbon in Petroleum Residuum,<sup>1</sup> claims to prove that the bitumen of Trinidad asphalt is completely soluble in petroleum residuum; but the two experiments on which he bases his claim are by no means convincing, as can be seen. In his first experiment in which he allows a tank of Trinidad asphalt cement to stand in a melted condition for a week without agitation, he finds upon examining samples of cement from the top and bottom of the tank, that there is no particular difference in the composition of these samples as far as the constituents of the bitumen is concerned, and merely an increase of from 5 to 6 per cent of mineral matter in the bottom over the top. The fact of his getting such a slight increase in mineral matter in the bottom over that from the top shows that the subsidence was very incomplete, and surely not sufficient to allow any insoluble bitumen, which is of about half the gravity at least of the mineral matter, to subside. In the other experiment he extracts the bitumen from Trinidad asphalt with chloroform, evaporates off the solvent, and adds to this pure bitumen the quantity of petroleum residuum equivalent to the amount used in making an asphalt cement. On examining this asphalt cement with a high-power microscope he finds that it appears to be perfectly homogeneous. One great fallacy in this experiment is in the pure bitumen extracted from the refined asphalt by means of chloroform. I have found in trying to obtain a pure bitumen by extracting with chloroform and carbon disulphide and evaporating off the solvent that it is impossible to remove all the solvent from the bitumen without heating it to such a temperature that it would destroy the original character of the asphalt. I know of other experimenters who have experienced the same difficulty in removing all the solvent and have at times thought themselves successful, as not the slightest odor could be noticed on the sample, but upon opening the box containing the sample after it had been packed away for several weeks the odor of the solvent could be plainly detected.

In beginning my work on this subject, I was much puzzled as to how to accomplish my end. The impurities in the asphalt, amounting to 44 per cent, made microscopic examination useless, and as I was unable to get the asphalt in so liquid a state from heat that it would filter even under an exhaust, I had to abandon the idea of working on the pure asphalt bitumen. I then tried filtering an asphalt cement taken from one of the paving yards, made of 100 parts of refined Trinidad asphalt, 19 parts of petroleum residuum, but with no better success even when rendered quite liquid with heat and using a high exhaust. After the addition of a quantity of residuum to this cement sufficient to make a mixture having equal quantities of refined asphalt and residuum, filtering through a Goosch crucible was again tried with an exhaust of 24 inches of mercury and with the mixture kept in a liquid condition at 325° F. Only a small fraction of a cubic centimeter was obtained before the filter gummed up. This filtrate upon microscopic examination at normal temperature was found to be composed of two bitumens, one suspended in the other in the form of small globules. On heating, these globules disappeared and apparently went into solution in the other bitumen. These globules did not immediately form on cooling, but required at least twenty-four hours before again developing. I then added double the quantity of residuum, making a mixture of two parts residuum to one part refined Trinidad asphalt, and incorporated them by stirring at a temperature of 300° F. I was now able to filter about 20 cubic centimeters through the Goosch crucible kept at a temperature of 300° F., with an exhaust of 24 inches mercury. The filtering was very slow, and in an hour or two had practically ceased. This filtrate was examined under the microscope and was found to resemble the last one except that the globules of the insoluble bitumen were fewer in number. Analyses to determine the total

<sup>1</sup>Municipal Engineer, Vol. 13, No. 2, p. 67.

bitumen soluble in carbon disulphide and petroleum naphtha, which were made on this filtrate and on the portion left in the Goosch filter, which was largely composed of the unfiltered mixture, resulted as follows:

|                                                                 | Filtrate.        | Residue.         |
|-----------------------------------------------------------------|------------------|------------------|
|                                                                 | <i>Per cent.</i> | <i>Per cent.</i> |
| Bitumen soluble in naphtha .....                                | 93.75            | 67.38            |
| Bitumen insoluble in naphtha soluble in carbon disulphide ..... | 6.20             | 7.02             |
| Earth residue and foreign organic .....                         | .05              | 25.60            |
| Portion of total bitumen soluble in naphtha .....               | 93.79            | 90.56            |
| Portion of total bitumen insoluble in naphtha .....             | 6.21             | 9.44             |

From the above it is very evident that there is marked difference in the bitumen that filtered through and that left on the filter. In taking these results and those from the microscopic examination of the filtrate we are led to the conclusion that the bitumen of Trinidad asphalt is not completely soluble; that it is more soluble in hot residuum than in cold, and that this extra amount that goes into solution on heating separates out on cooling. As these experiments were carried out on a mixture much richer in petroleum residuum than is ever used in practice, it was considered advisable to make further investigations that could not be open to this criticism. Two cements were obtained from a paving yard, one such as is used in the topping mixture, composed of 100 parts refined Trinidad asphalt to 19 parts of petroleum residuum. The other such as is used in the binder course, composed of 100 parts of refined Trinidad asphalt and 25 parts of residuum. A third cement was made in the laboratory by thoroughly incorporating 100 parts refined Trinidad asphalt with 27 parts of a good quality asphaltic oil, or as some have called it, a California petroleum residuum. Portions of these three asphalt cements were melted into large test tubes, these tubes being filled to within an inch of the top. They were then placed in a hot oven in a vertical position and kept at a temperature averaging 300° F. for forty-eight hours, thus allowing a subsidence to take place while the cements were in a melted condition. After being allowed to cool, the tubes were broken and analyses made in each case on material taken from the top and bottom of the tubes, care being taken, however, to discard the immediate top of each tube as they showed signs of being oxidized. These results will be found in the accompanying table.

TABLE F.

|                                                  | Topping cement. |                |                 | Binder cement. |                |                 | Asphalt oil cement. |                |                 |
|--------------------------------------------------|-----------------|----------------|-----------------|----------------|----------------|-----------------|---------------------|----------------|-----------------|
|                                                  | Original.       | Top of tube.   | Bottom of tube. | Original.      | Top of tube.   | Bottom of tube. | Original.           | Top of tube.   | Bottom of tube. |
| Total bitumen soluble in carbon disulphide ..... | <i>Per ct.</i>  | <i>Per ct.</i> | <i>Per ct.</i>  |                | <i>Per ct.</i> | <i>Per ct.</i>  | <i>Per ct.</i>      | <i>Per ct.</i> | <i>Per ct.</i>  |
| Naphtha soluble bitumen .....                    | 63.91           | 71.86          | 36.88           | .....          | 80.57          | 41.22           | 65.42               | 76.10          | 36              |
| Earthly and foreign organic matter .....         | 45.86           | 53.06          | 25.62           | .....          | 62.61          | 30.71           | 49.08               | 56.95          | 26.94           |
| Total bitumen soluble in naphtha .....           | 36.09           | 28.14          | 63.12           | .....          | 19.43          | 58.78           | 34.58               | 23.90          | 64              |
| Total bitumen insoluble in naphtha .....         | 71.66           | 73.87          | 68.06           | .....          | 77.71          | 74.50           | 75.02               | 74.84          | 74.83           |
|                                                  | 23.34           | 26.13          | 31.94           | .....          | 22.29          | 35.50           | 24.98               | 25.16          | 25.17           |

On examining these results we find in the case of the two cements made with petroleum residuum that several per cent of the asphalt bitumen has been rendered insoluble by the addition of the residuum, and that this insoluble bitumen is held in suspension and will settle out as so much inert material. It is impossible to even approximate the quantity of insoluble bitumen, but it must be quite some more than has settled in these experiments, for being of much less gravity it is only reasonable to believe that proportionally less of it would settle than of the mineral ingredients, and there are still quite some of these held in suspension. Combining with all this soluble in hot residuum than in cold) the quantity of this bitumen insoluble in the residuum at normal temperatures must be considerable. In the case with the cement of asphalt oil we find that even though there was quite as much mineral matter subsided, yet the bitumen is of uniform composition throughout the tube, showing a complete solution. Judging from the physical properties of petroleum residuum and its chemical relation to asphalt bitumen it is not a desirable flux, but it should

not be judged too strongly in the absence of physical tests carried on on the asphalt cement made with it. Such an investigation is in progress comparing asphalt cement made with petroleum residuum and several asphalt oils as fluxes with Trinidad asphalt, along with several other well-known asphalt cements.

The comparisons to be made are: Susceptibility to change in temperature, rapidity of aging, loss and change in consistency on keeping at high temperatures for a length of time, and the action of water on paving mixtures made with the several cements. Some results have been obtained on this investigation, but they are too few and incomplete to be of use in forming conclusive opinions.

There is one thing before closing that can be said, and that is that the old objections raised to asphaltic oils as fluxes are no longer tenable. I have found asphalt oils that lose less and are much less changed in all respects on being kept at high temperatures than some of the best petroleum residuums. There are several asphalt cements that I have found, two of which are on the market, that contain no petroleum residuum, but yet lose less and are less altered in consistency than a Trinidad asphalt cement made with residuum.

#### A NEW APPARATUS FOR DETERMINING THE RELATIVE VISCOSITY OF ASPHALTS AND ALLIED BODIES.

It was not long after the laying of the first asphalt pavement, made under the De Smedt patent, which consists of an artificial mixture of a more or less pure asphalt cement with sand and dust, that the question presented itself of how to determine when the asphalt cement was of the proper degree of softness or consistency. I use here the word softness or consistency to better express my meaning to those who are not acquainted with the physical properties of asphalt and asphalt cements (more correctly speaking it is viscosity, but this might convey the idea that asphalt cements were fluids in the sense which is generally understood). If we look into the properties of asphalts and asphalt cements, such as are suitable to be used in pavements, we find that they are, truly speaking, fluids; that they have a marked flow at ordinary temperatures, and that they will flow until stopped by some confining body or until an equilibrium has been reached. To illustrate the flow of these very thick liquids, an asphalt, which was so hard that the pressure of a nail hardly left an imprint, was molded in the shape of an ordinary brick. This asphalt brick was placed on end in a room that was kept at ordinary temperatures. In the course of several months it flattened down into a pat but three-quarters of an inch in thickness.

An asphalt cement which is really nothing more than an asphalt of the proper consistency to be used for paving is so fluid that it must be kept in a tight box, and if a small piece of metal should be left on its surface it will sink from view in a day or two. This viscosity of asphalt increases or diminishes as its temperature is raised or lowered. For this reason great care should be taken in comparing two or more samples that they be all of the same temperature. The first method devised to determine whether an asphalt cement was of the proper degree of softness to produce a good pavement was by chewing a small piece and judging by the resistance it offered to the teeth. This method is not as inaccurate as it would seem at first to be. All mouths are pretty near the same temperature, and the general rule followed was that if an asphalt cement chewed easily and yet was not soft enough to adhere to the teeth it was of the proper consistency for paving. This method is, however, not all that could be desired, as the viscosity could not be expressed numerically, and then, as knowledge as to the way of laying asphalt pavement increased, it was recognized that to produce the best results the viscosity of the cement should differ in different climates, and also according to the character and proportion of sand and dust used.

In 1888 Mr. Bowen, then head chemist for the Barber Asphalt Paving Company, filled the long-felt want for such tests by devising an apparatus to determine the relative viscosity or softness of asphalt and allied bodies. The principle of his apparatus, which is generally spoken of as a penetration machine, is to determine the distance a weighted needle will penetrate into an asphalt at a standard temperature in a given time. This is accomplished by having a large needle inserted in the end of a weighted lever arm. This lever arm is suspended by a linen thread from a spindle around which it is wrapped. At one end of this spindle is fastened a pointer which indicates on a dial the distance up or down moved by the lever arm carrying the needle. On this spindle is a small drum round which winds a thread supporting a weight which acts as a partial counterbalance to the weight of the lever arm. This counterweight keeps the lever thread taut, and when the lever arm is raised it returns the pointer on the dial. The viscosity of a sample is determined by placing it under the needle, which is then lowered until its point just touches the surface of the sample. The position of the pointer on the dial being noted, a clamp is released which allows the needle to penetrate into the sample for any fixed time. At the end of this time the clamp is closed and the distance the needle has penetrated can be

read from the dial. Care must be taken that all samples be kept at a standard temperature for at least half an hour before making the test. This is accomplished in several ways, the most accurate being to keep the machine and samples in a small room kept at a standard temperature.

The method most generally in use at paving yards, or where it is impracticable to keep a room for this purpose, is to keep the samples in a tank of water at the standard temperature. To make the test the sample is quickly removed, dried and tested, as before. Unless the temperature of the room is abnormally high or low, two or three tests can be made on the sample before its temperature is sufficiently changed to materially affect the results. I have used a modification of this method that works very well, doing away with the errors caused by the evaporation of water from the surface of the sample, and the influence the temperature of the surrounding air has on it after removal from the water tank. A small glass dish is kept in the tank with the cements, and when a test is to be made the sample is removed from the tank in this dish, being completely covered with water of the standard temperature. The needle is then set to the surface of the sample as before, by looking through the sides of the glass vessel, and the test made while the sample is submerged. That this apparatus of Mr. Bowen has proved itself practical and useful for the work it was intended will be better appreciated when I say that there are at least twenty-five paving yards throughout the country equipped with it. They are operated by the foreman in charge of the yard or his clerk, and it is remarkable what good results are obtained. It can be seen that the field of usefulness of this apparatus in its present form is limited to determinations made at or near the normal temperature, while it is often desirable to compare the viscosity of asphalts, etc., at, say, winter or summer temperatures. Another objection is that it is impossible to accurately determine the exact weight acting to force the needle into the sample owing to the friction at the fulcrum of the arm and the friction of the spindle in its bearings, and also calculate the force expended in overcoming the inertia of starting the several portions of the machine into motion, and it is impossible to get concordant results with two machines unless they are built exactly alike.

In the machine I have devised I have endeavored to overcome these objections. The tests are all made in a water-jacketed copper box. Any temperature can be obtained in this box by running through the jacket water cooled or heated as desired. The needle penetrates under a direct weight with practically no friction. The description of this apparatus in detail is as follows: The penetrating needle, which is an ordinary No. 2 sewing needle, is rigidly fastened in the end of a small brass rod. This rod is inserted in the end of an aluminum tube, about 40 centimeters in length and 1 centimeter in diameter, where it is securely fastened by means of a binding screw. By filling or partially filling this tube with mercury it can be made of any desired weight from 30 to 300 grams, after which it is closed by a cap which screws on to the end opposite the needle. When this cap is screwed into place, its surface, which is perfectly flat, is absolutely at right angles to the sides of the tube. The aluminum tube holding the needle passes down through a wooden framework in which it is held in a vertical position, with the needle end down, by means of a jaw clamp. When this clamp is released the tube can move freely up or down, while it is retained in its vertical position by two guides. These guides are each made of two metal plates a fraction of a centimeter in thickness. Each plate has a semi-circular piece cut out of one side, so that when the two are placed together it leaves a circular opening through which the aluminum tube passes freely, but yet not so freely as to get out of the vertical. To facilitate the removal of the needle tube from the framework, as it must be slightly inclined while withdrawing so as to clear the measuring device, the guides are constructed so that one plate in each can be pushed a short distance from the other, thus allowing the inclination of the tube. These plates are returned to their original position by springs.

In the upper part of the framework directly over the tube is a spindle 3.17 millimeters in diameter, with a pointer on one end which turns on a dial. A small plumb weight is suspended from the spindle by a fine platinum thread which winds on it. This weight is partly counterbalanced by a second weight suspended from the spindle by a linen thread. These weights are so that if they be allowed to move freely the former is just sufficiently heavy to cause it to fall gradually, and when the aluminum tube is in position this weight will fall until it just touches the surface of the cap on the top of the tube. The fall of 1 centimeter of this weight causes the spindle to make one revolution, thus making one revolution of the pointer on the dial equivalent to 1 centimeter. The above framework is fastened onto the cover of a copper chamber, the aluminum tube projecting through this cover into the chamber, needle end down. This cover, which is of wood, is made in two thicknesses, with an air chamber between, thus more perfectly insulating the interior of the chamber from the outside air. It is supplied with two large windows on each side of where the needle tube passes in, admitting light and allowing the operator to see the sample. The chamber to hold the samples, which is of thin sheet copper, is constructed with a rounded bottom like a kettle, and is fitted with a flat false bottom or flooring of sheet iron.

Raised above the flooring about an inch, resting on three rollers, is a circular disk, on which the samples to be tested are placed in a circle about half an inch from the edge. This disk can be rotated like a turntable by means of an iron rod which passes through its center into a bearing on the floor and out through the cover of the chamber, where it is fitted with a wheel. By turning this wheel, thus revolving the disk, each sample on it can be brought in turn under the penetrating needle. In this way twelve samples can be tested by this particular apparatus without opening the chamber. Two swinging mirrors are fastened—one on each side of the copper chamber—one mirror being so adjusted as to throw light on the sample to be tested, while the other reflects the image of the sample so that it can be seen by looking in through a window in the cover. This copper chamber is fastened into a lead-lined tank, which is filled with water of any degree, or a freezing mixture, as the case may be, to produce the desired temperature in the chamber. To keep this temperature constant the tank is supplied with one inlet, in the center of the bottom, and four outlet pipes, one on each side near the top. The temperature of the copper chamber is regulated by a simple electrical thermostat suspended in it, which will cut off or let on a supply of liquid or water entering the tank as the temperature requires.

In making a test or tests the samples are placed in position on the disk in the copper chamber, the cover with the apparatus put in place, and the chamber secured in the lead-lined tank. The water or liquid of the desired temperature is run into the tank, which is allowed to fill and run off by the overflow pipes. The entire apparatus is then leveled by leveling screws in the feet of the tank until the needle tube is perfectly vertical. When asphalt is to be tested it is for convenience put into small round tins like small blacking boxes. By heating just sufficiently to melt it a smooth surface is obtained with quite a gloss. These boxes containing the samples are placed on the revolving disk, each sample resting on two raised points on the surface of the disk, this giving them a slight incline. The table is then revolved until the desired sample is directly under the needle tube, when it is lowered until the needle is very nearly in contact with the surface. The surface of the sample being slightly inclined, it can be brought just in contact with the needle by a slight revolution of the disk. By arranging the mirror on top of the cover so that it will reflect the light from a window down upon one of the mirrors in the chamber—which in turn reflects it on the surface of the sample—and then having the other mirror in the chamber in such a position as to reflect the image of the sample up, the needle can be set accurately to the surface by watching its reflection in the surface of the sample. To determine the penetration the reading of the dial is taken, the clamp is released, which allows the needle to sink in the asphalt under the weight of the tube. The apparatus is so constructed that when the clamp is released from the tube another clamp closes on the thread of the counterbalance weight, thus preventing the plumb weight from falling and adding its weight to that of the tube. On clamping the tube again at the expiration of the desired time the thread of the counterweight is released, which allows the plumb weight to sink until it is checked by the top of the tube. The present reading of the dial, less that before taken, is the distance the needle penetrated into the sample. Readings can be made with accuracy to one-fiftieth millimeter.

Respectfully submitted.

A. W. Dow,  
*Inspector of Asphalts and Cements.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.*

# REPORT OF THE PERMIT CLERK.

WASHINGTON, August 8, 1898.

SIR: Permits issued during the fiscal year ended June 30, 1898, were:

|                                          |       |       |
|------------------------------------------|-------|-------|
| Water connections .....                  | 1,843 |       |
| Water repairs .....                      | 857   |       |
| Water specials .....                     | 276   |       |
|                                          |       | 2,976 |
| Sewer connections .....                  | 2,073 |       |
| Sewer repairs .....                      | 1,023 |       |
| Sewer specials .....                     | 361   |       |
|                                          |       | 3,457 |
| Gas and electric light connections ..... | 959   |       |
| Gas and electric light repairs .....     | 187   |       |
| Gas and electric light specials .....    | 34    |       |
|                                          |       | 1,170 |

|                                                                           |     |
|---------------------------------------------------------------------------|-----|
| Lay gas mains .....                                                       | 72  |
| Lay and repair electric conduits .....                                    | 38  |
| Erect and replace telegraph and telephone poles .....                     | 129 |
| Erect railings to inclose parkings .....                                  | 464 |
| Alleys, close temporarily .....                                           | 2   |
| Alleys, grade and fill .....                                              | 7   |
| Alley, repair pavement .....                                              | 1   |
| Alleys, excavate in .....                                                 | 6   |
| Bridges, haul loads of 6 tons and more over .....                         | 13  |
| Bridge, erect electrical fixtures on .....                                | 1   |
| Bridge, place over gutter .....                                           | 1   |
| Bridge, place electric wires on .....                                     | 1   |
| Bridge, renew floor .....                                                 | 1   |
| Bridge, remove floor temporarily .....                                    | 1   |
| Cables, repair underground .....                                          | 4   |
| Copings, erect and repair on parkings .....                               | 52  |
| Conduit, take up section (Chesapeake and Potomac Telephone Company) ..... | 1   |
| Cellar door, adjust to grade of sidewalk .....                            | 1   |
| Curbs, reset .....                                                        | 2   |
| Carriage blocks, place on sidewalk at curb .....                          | 3   |
| Construction material, place on streets .....                             | 2   |
| Driveways, lay, repair, and remove .....                                  | 26  |
| Drains, lay .....                                                         | 8   |
| Drains, repair .....                                                      | 3   |
| Down spout, connect to sewer lateral .....                                | 1   |
| Drilling machine, place on sidewalk .....                                 | 1   |
| Engines, move traction by own power over roads .....                      | 4   |
| Engine, place pumping, on sidewalk .....                                  | 1   |
| Excavate in streets .....                                                 | 6   |
| Flag, display by attaching to tree .....                                  | 1   |
| Flag pole, erect .....                                                    | 1   |
| Fences, repair, renew, or replace .....                                   | 503 |
| Fences, remove and reset .....                                            | 3   |
| Fences, erect on parkings without fee .....                               | 3   |
| Guard stones, place in alleys .....                                       | 4   |
| Gutter, dig .....                                                         | 1   |
| Gutter, clean and open .....                                              | 1   |
| Hand-hole, build .....                                                    | 1   |
| Haul over sidewalks .....                                                 | 22  |
| Hitching posts, erect, straighten, and replace .....                      | 17  |
| Hedges, plant at fence line on parkings .....                             | 3   |
| Lamps, erect private electric .....                                       | 2   |
| Lamp-post, erect for displaying coal-oil lamp .....                       | 1   |
| Manholes, remove cover (sewers) .....                                     | 4   |
| Manholes, build on electric conduits .....                                | 4   |
| Manhole, remove from electric conduit .....                               | 1   |
| Manholes, enlarge on electric conduits .....                              | 11  |
| Material, take from unimproved streets .....                              | 17  |
| Material, fill in unimproved streets .....                                | 16  |
| Material, pile in streets (soil) .....                                    | 5   |
| Material, deposit, in alley (ashes) .....                                 | 1   |
| Overhead wires, make house connections .....                              | 29  |
| Overhead wires, string and renew with copper .....                        | 39  |
| Parking leads, lay .....                                                  | 39  |
| Parking leads, relay or repair .....                                      | 438 |
| Parkings, erect steps on .....                                            | 162 |
| Parkings, repair or replace steps on .....                                | 35  |
| Parkings, grade .....                                                     | 77  |
| Parkings, sod and plant flowers in .....                                  | 69  |
| Parkings, pave over .....                                                 | 30  |
| Poles, place ground wires on .....                                        | 62  |
| Pipe line, (oil) repair .....                                             | 2   |
| Roadways, drive derrick pins in .....                                     | 1   |
| Roadways, repair and grade .....                                          | 2   |
| Rail welder, operate on streets .....                                     | 6   |
| Sidewalks, lay .....                                                      | 1   |
| Sidewalks, repair .....                                                   | 29  |
| Sidewalk, grade .....                                                     | 75  |
| Sidewalk, make excavation in .....                                        | 1   |
| Sewers, connect railroad conduits with .....                              | 1   |
|                                                                           | 111 |

|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| Sewers, connect electric conduits with.....                                      | 27 |
| Sewer lateral, clear .....                                                       | 1  |
| Sewer lateral, relay .....                                                       | 1  |
| Sockets, place in sidewalk.....                                                  | 2  |
| Stopcock box, adjust to grade .....                                              | 1  |
| Streets, repair .....                                                            | 3  |
| Street sweepings, store.....                                                     | 1  |
| Street, barricade .....                                                          | 1  |
| Snowplow, use horsepower on sidewalk.....                                        | 1  |
| Steam rollers, move through streets .....                                        | 1  |
| Trees, cut down.....                                                             | 9  |
| Trees, place guards around.....                                                  | 2  |
| Trees, whitewash .....                                                           | 54 |
| Tree spaces, extend .....                                                        | 2  |
| Tree spaces, pave .....                                                          | 2  |
| Tree spaces, sod.....                                                            | 5  |
| Tree boxes, paint .....                                                          | 1  |
| Vault door, enlarge in sidewalk .....                                            | 2  |
| Vault door, replace .....                                                        | 2  |
| Walls, place on parkings (retaining) .....                                       | 14 |
| Walls, cement to prevent dampness .....                                          | 6  |
| Water tables, build of cement on parkings .....                                  | 7  |
| Wires, string and repair trolley .....                                           | 2  |
| Walks, make temporary.....                                                       | 1  |
| Wharves, build and repair .....                                                  | 2  |
| Well, drive in parking.....                                                      | 1  |
| Well, construct in parking from sewer (United States Electric Lighting Co.)..... | 1  |

*Railroad companies.*

|                                                                |   |
|----------------------------------------------------------------|---|
| Baltimore and Ohio:                                            |   |
| Lay plank at street crossing.....                              | 1 |
| Straighten arc-light poles.....                                | 1 |
| Relay bridge flooring .....                                    | 1 |
| Repair safety gates .....                                      | 1 |
| Remove safety gates .....                                      | 1 |
| Construct safety gates and build watch box .....               | 1 |
| Brightwood Company:                                            |   |
| Put in switch and rearrange tracks.....                        | 1 |
| String feeder wire .....                                       | 1 |
| Belt Company:                                                  |   |
| Equip with air motors .....                                    | 1 |
| Salt tracks for melting snow .....                             | 1 |
| Capital Company:                                               |   |
| Install Brown underground system.....                          | 1 |
| Install Brown system on Navy-Yard Bridge .....                 | 1 |
| Replace contact boxes .....                                    | 1 |
| Extend time for trial of Brown system .....                    | 2 |
| Repair underground cable.....                                  | 1 |
| Repair along line of tracks.....                               | 1 |
| Connect with testing station in Eleventh street southeast..... | 1 |
| Capital Traction Company:                                      |   |
| Remove cable machinery from vaults in streets .....            | 4 |
| Install electric power .....                                   | 1 |
| Place construction in streets .....                            | 1 |
| Weld rails in streets .....                                    | 1 |
| Drive pins in roadway to draw in feed wires.....               | 1 |
| Salt tracks for melting snow .....                             | 1 |
| Columbia Company:                                              |   |
| Remove cable from conduit of Capital Traction Company .....    | 1 |
| Repair along line of tracks .....                              | 1 |
| Place paving material along line .....                         | 1 |
| Eckington and Soldiers' Home Company:                          |   |
| Repair along line of tracks.....                               | 1 |
| Equip with air motors .....                                    | 1 |
| Salt tracks for melting snow .....                             | 1 |
| Repair overhead trolley wires.....                             | 1 |
| String extra guywire .....                                     | 1 |
| Georgetown and Tennallytown Company:                           |   |
| Repair along line of track.....                                | 1 |
| Erect post and clock in front of car shed .....                | 1 |

*Railroad companies—Continued.*

|                                                           |   |
|-----------------------------------------------------------|---|
| <b>Metropolitan Company:</b>                              | 1 |
| Lay temporary tracks to remove cars.....                  | 1 |
| Repair conduit.....                                       | 1 |
| Pave along parking.....                                   | 1 |
| <b>Maryland and Washington Company:</b>                   | 1 |
| Salt tracks for melting snow.....                         | 1 |
| <b>Philadelphia, Wilmington and Baltimore Company:</b>    | 1 |
| Connect turntable pit with sewer.....                     | 1 |
| Erect watch bow.....                                      | 1 |
| Pave over parking.....                                    | 1 |
| Repair safety gates.....                                  | 1 |
| <b>Southern Company:</b>                                  | 1 |
| Pave sidewalk with flagstones.....                        | 1 |
| <b>Washington, Alexandria and Mount Vernon Company:</b>   | 1 |
| Remove trees on Thirteen and-a-half street northwest..... | 1 |
| <b>Washington and Great Falls Electric Company:</b>       | 1 |
| Lay permanent cross over.....                             | 1 |
| Erect and string wires to operate block system.....       | 1 |
| Alter overhead wires.....                                 | 1 |

*United States Government.*

|                                                                                |               |
|--------------------------------------------------------------------------------|---------------|
| <b>Officer in charge of public buildings and grounds (Col. T. A. Bingham):</b> | 1             |
| Repair water, sewer, and gas mains and services.....                           | 1             |
| Replace telegraph pole.....                                                    | 1             |
| Lay underground conduit.....                                                   | 1             |
| <b>Public Printer (Hon. F. W. Palmer):</b>                                     | 1             |
| Construct conduit across Jackson alley.....                                    | 2             |
| Repair water main.....                                                         | 1             |
| Erect telegraph pole.....                                                      | 1             |
| <b>Secretary of War (Hon. R. A. Alger):</b>                                    | 1             |
| Open street (excavation).....                                                  | 1             |
| Connect with sewer in square 169.....                                          | 1             |
| <b>Treasury Department:</b>                                                    | 1             |
| Repair sewer lateral.....                                                      | 1             |
| <b>United States Commissioner of Fish and Fisheries:</b>                       | 1             |
| Repair sewer lateral.....                                                      | 1             |
| <b>United States Navy-Yard:</b>                                                | 1             |
| Connect with sewer.....                                                        | 1             |
| <b>United States Marine Corps:</b>                                             | 1             |
| Clean drain in sidewalk.....                                                   | 1             |
| Examine drain in sidewalk.....                                                 | 1             |
| <b>Washington Aqueduct (Capt. D. D. Gaillard):</b>                             | 1             |
| Make borings, surveys, etc., Massachusetts avenue extended, at Rock Creek..... | 1             |
| String telephone wires.....                                                    | 1             |
| <b>Grand total.....</b>                                                        | <b>10,465</b> |

There has been an increase in the number of permits issued as compared with the fiscal year ended June 30, 1897, and also in the amount of money received for permit fees, as shown by the report of the collector of taxes, District of Columbia, there being \$490 more than for the fiscal year 1896-97.

Permits issued during the fiscal year:

|              |        |
|--------------|--------|
| 1896-97..... | 10,155 |
| 1897-98..... | 10,465 |

The following table shows the number of permits issued during the last five years and the amount of money paid the collector of taxes, District of Columbia, during that time:

| Fiscal year. | Permits issued. | Fees paid. |
|--------------|-----------------|------------|
| 1893-94..... | 8,064           | \$7,024    |
| 1894-95..... | 8,740           | 7,229      |
| 1895-96..... | 11,453          | 7,236      |
| 1896-97..... | 10,155          | 7,355      |
| 1897-98..... | 10,465          | 7,845      |



Six hundred and eighty-five communications have been referred to this office, entered in the letters-received book and on cards, permits written for the majority of them, the action noted, and their return to the record office of the engineer department of the District of Columbia, or through that office to the division having charge of the inspection of the work for which the permits were issued.

Three hundred and fifteen names have been recorded for positions as laborers on the different works of the District of Columbia during the fiscal year ended June 30, 1898.

The continued improvements of the roadways, and especially the sidewalks, replacing the brick with cement or granolithic, increases the work of the office. Plumbers, or other persons having permits to make excavations, must have stamped on the permit the kind of pavement to be cut. The employees of this office are required to know there is a deposit to the credit of the person to whom the permit is issued sufficient to pay the cost of repairs. The registered plumbers are required to make with the collector of taxes a deposit of \$25 before being granted a permit, and against this deposit is charged the cost of repairing cuts made by them. The location of all cuts is reported weekly to the computing engineer, and the repairs are made by employees of that division of the engineer department. Statement of costs of repairs is rendered monthly, each plumber being required to promptly deposit such amount with the collector of taxes as to bring his balance to \$25. Failure to make such additional deposit within five days after rendition of account prevents permits being issued him until he has again brought the funds to his credit up to \$25. Whenever application is made to make cuts in any improved streets, the estimated cost of the repair of which is more than \$25, the plumber must deposit a sufficient sum to make the amount of his credit equal to the estimated cost of doing the work, plus \$10, before the permit can be issued.

Care has to be exercised by the employees of this office to notify persons having permits to make excavations of the location of electric-light, telegraph, and telephone conduits in the roads, sidewalks, and alleys, to guard the cables therein from injury by the tools of the workmen making the excavation.

All permits to make excavations to connect with or repair underground constructions, erect parking fences, hitching posts along the inner edge of the curb, place carriage blocks of prescribed dimensions at the curb, etc., are issued from this office. With the exception of special permits allowed by the plumbing regulations or ordered by the Commissioners of the District of Columbia, a fee of \$1 is charged for each building, lot, premises, or establishment connected, and for each excavation made for repairing pipes or other underground structures, and for the erection or replacement of a pole or more than one pole. This fee is in all cases paid the collector of taxes of the District of Columbia and his receipt entered upon the application before the permit is issued, all other employees of the District of Columbia being prohibited from collecting or receiving, or in any manner being the medium for the transmission of funds of any kind whatever due or payable to the District of Columbia.

Very respectfully,

H. M. WOODWARD,  
Permit Clerk.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.

## FIRST DIVISION.

(Capt. EDWARD BURR,

*Corps of Engineers, United States Army, Assistant to the Engineer Commissioner, in charge until April 28, 1898.)*

|                                         |                                                                                 |
|-----------------------------------------|---------------------------------------------------------------------------------|
| WATER DISTRIBUTION.....                 | W. A. MCFARLAND,<br><i>Superintendent Water Department.</i>                     |
| WATER RATES .....                       | GEO. F. GREEN,<br><i>Water Registrar and Chief Clerk,<br/>Water Department.</i> |
| STREET LIGHTING .....                   | } W. C. ALLEN,<br><i>Inspector of Electric Lighting.</i>                        |
| ELECTRIC WIRES AND CONDUITS .....       |                                                                                 |
| INSPECTION OF GAS AND METERS .....      | S. CALVERT FORD,<br><i>Inspector of Gas and Meters.</i>                         |
| BUILDINGS AND BUILDING INSPECTION ..... | J. B. BRADY,<br><i>Inspector of Buildings.</i>                                  |
|                                         | E. F. VERMILLION,<br><i>Inspector of Elevators.</i>                             |
| SURVEYOR'S OFFICE .....                 | WM. P. RICHARDS,<br><i>Surveyor, District of Columbia.</i>                      |
| PARKING COMMISSION .....                | TRUEMAN LANHAM,<br><i>Superintendent of Parking.</i>                            |

## REPORT OF THE SUPERINTENDENT OF THE WATER DEPARTMENT.

WASHINGTON, July 21, 1898.

SIR: I have the honor to submit the following report on the work of the distribution branch of the District water department for the fiscal year ending June 30, 1898.

### DISTRIBUTION SYSTEM.

The distribution system of the District is divided into three general parts: The low-service area, lying between tide level and an elevation of about 95 feet above tide, supplied by gravity; the middle service, covering a territory having an elevation varying from 95 to 210 feet above tide, supplied by direct pumping, and the high service, covering that part of the District having an elevation between 210 and 400 feet above tide, supplied by indirect pumping through the Fort Reno Reservoir, with a capacity of 4,500,000 gallons and a normal surface elevation of about 420 feet above mean tide.

The limits of the low-service area are indicated on the map herewith. From this it will be seen that practically all of the "city," or the area lying south of Florida avenue, is supplied by gravity. By reference to this same map the general arrangement of trunk mains (in which classification are included all sizes above 6 inches) will be readily understood. The higher areas both in the northwest and on Capitol Hill are, as indicated, supplied wholly through the 48-inch main, which is run as an independent line from the distributing reservoir. This arrangement was adopted in pursuance of an effort to maintain satisfactory pressures over these higher areas. This is partially effective, the heads being some 5 or 6 feet better over the area supplied by the 48-inch main than would be the case were all four supply mains cross connected. As will be shown later, however, the existing pressures over considerable areas are far from satisfactory.

### SERVICE MAINS.

The size adopted for service mains on all streets and avenues is 6 inches; in the alleys short lengths of 4 and 3 inch pipe are used. The general arrangement is to lay a 6-inch main under the sidewalks or parking on each side of the wider and asphalt-paved streets, or a single main near the center of the narrower streets,

especially in the outskirts of the city. The two mains are, when practicable, brought into one at the street intersections and the four radiating lines controlled by a single four-stem four-way stop valve. Many variations from this general plan are, of course, necessary.

The maximum and minimum pressures at ground level on the several services are about as follows:

|              | Maximum. | Minimum. |
|--------------|----------|----------|
| Low .....    | 35       | 10       |
| Middle ..... | 75       | 12       |
| High .....   | 100      | 12       |

#### FIRE HYDRANTS.

The total number of fire hydrants in use is about 1,800, 75 having been erected during the past year. In general, one hydrant is placed near each street intersection, with intermediate locations where necessary. Each hydrant has a 6-inch standpipe 4 feet in length, and is provided with either two or three 2½-inch independent cut-off nozzles for fire hose.

The mean daily consumption and waste of Potomac water in the District of Columbia for the past year, as shown by the records of the Aqueduct office, is 47,288,733 gallons. Of this amount 42,506,620 gallons went to the low service, 4,656,000 gallons to the middle, and 121,113 gallons to the high. Estimated total population, 280,782; estimated number of water consumers, 264,302. Corresponding per capita rate for whole District, 168 gallons; corresponding per capita rate for every person using Potomac water, 179 gallons.

#### WATER WASTE.

A large number of tests and experiments have been made during the year for the purpose of further determining the cause, amount, and location of the enormous waste of water constantly going on. All evidence available goes to confirm the belief heretofore reached that the amount of water wasted considerably exceeds that usefully applied, and that of this waste a large amount occurs in private houses.

Authority has been given this department to meter municipal buildings, and under this authority all schoolhouses in the District have been permanently metered. Some of the results obtained by this action are indicated in one of the tables appended hereto.

Probably the most important results were obtained by the use of the "Deacon waste-water meters," three of which were installed in different parts of the city.

The "rate" in gallons per hour at which water is flowing through this meter is automatically recorded on a graduated chart, ordinates representing rates of flow and abscissas time.

This meter having been placed on a main supplying a certain section, usually having a population of between 1,000 and 2,000, the valves on the boundary of this section are so manipulated that all water flowing into it must pass through the meter. If the service be wholly domestic all flow between the hours of midnight and 4 a. m. is considered waste.

Therefore by this arrangement we get—

First. The rate at which water is supplied to the whole section and the rate of waste.

Second. By cutting out one block at a time, the rate of waste on this particular block.

Third. By shutting off at curb cock the flow to each house, the waste here, if any.

Fourth. All remaining flow must be due to leakages in valves or mains and is not chargeable against the water consumers.

In this way a complete analysis has been made in several parts of the city.

In this connection attention is invited to the report of Mr. John Green, who has had charge of tests by Deacon meters.

Under the law (sec. 24, chap. 68, C. S. D. C.) directing that the supply of water to all manufacturing establishments, hotels, livery stables, and other places requiring a large quantity of water shall be determined by meters, etc., 906 meters, varying in size from one-half inch to 6 inches, have been installed and have without doubt somewhat curtailed waste. The amount collected for water through meter measurement during the year was \$38,989.59, or 14.7% per cent of the total amount received. Only about 2 per cent of total number of water takers are supplied through meters.

The results obtained by the use of the Deacon meters, as summarized in Mr. Green's report, indicate the enormous wastes in private houses which do undoubtedly result from defective plumbing, carelessness, and wilful violation of regula-

tions. The only practicable remedy for this evil is the payment for water actually used or wasted on each premises, to be determined by meter measurement. In support of this proposition I would refer to the very able and complete argument presented by Capt. Edw. Burr, then assistant to the Engineer Commissioner, in the last annual report of the engineer department. The following extract is from that report:

"That the general introduction of meters will accomplish this end without hardship, increased cost to consumers, insanitary conditions, or any curtailment of the proper use of water there can be no doubt. The opinion of all authorities and the experience of all communities where the meter system has been generally introduced leads to this belief. By the use of meters is obtained a suppression of waste, a uniformity of water rates according to the amount of water used or wasted, and an increase of pressure, with a general improvement of the service without the expenditure of large sums for enlargements of works.

"To illustrate the benefits of the meter system it is necessary to refer to but one city, Detroit, with about the same population as the District of Columbia. The following quotations are taken from a statement made by Mr. L. N. Case, superintendent of the Detroit waterworks, before a committee of the legislature of the State of Michigan, having under consideration what is known as the 'free water bill' for Detroit:

"There has been found but one really efficient restriction to waste, and that is the meter, although assessing upon the basis of consumption as estimated is partially so. \* \* \*

"For years, and up to 1889, Detroit, Buffalo, and Philadelphia operated upon the assessment plan entirely. Detroit pumped a daily per capita supply of 204 gallons. Our capacity was more than exhausted, and complaints of short supplies were bitter and increasing. March 6, 1889, I demonstrated to the board that meters must be used to stop this enormous waste or an enlargement of the works entered into immediately at an estimated expense of \$600,000. The introduction of meters was decided upon. The following conditions of the three cities in 1887 and 1896 will show the results of the introduction of meters in Detroit and the continuance of the old method in Buffalo and Philadelphia:

*"Daily pumpage in million gallons.*

|                             | Buffalo. | Philadel-<br>phia. | Detroit. |
|-----------------------------|----------|--------------------|----------|
| 1887 .....                  |          |                    |          |
| 1896 .....                  | 38       | 88                 | 36       |
| Increase in population..... | 101      | 236                | 36       |
| .....per cent..             | 34       | 46                 | 56       |

"Detroit, at the same rate of increase of Buffalo and Philadelphia, which corresponded exactly with her increase previous to using meters, would have pumped 101,000,000 gallons daily. This would have required an expenditure of over \$200,000 for engines and pipes more than was expended, and an extra expense for pumping water of \$94,900 for last year, with a proportionate increase for the intervening years. \* \* \*

"One-third increased pressures.'

"The result in Detroit is a stationary total consumption for ten years, with a 56 per cent increase in population and a per capita decrease from 203 to 130 gallons. This was accomplished by metering about 5,000 consumers of a total of 49,000, and, while the effect is marked, the per capita supply still shows large waste that can be reduced by increasing the number of meters.

"In this city (Washington) the increase in the use of meters has produced a similar but not less marked effect. The existing law requires the use of meters only by hotels, livery stables, manufacturing establishments, and other large consumers. Since 1894 all such consumers have been required to use meters. The following table shows the result:

|                                   | 1894.        | 1895.        | 1896.        | 1897.        |
|-----------------------------------|--------------|--------------|--------------|--------------|
| Number of premises supplied ..... |              |              |              |              |
| Number of meters .....            | 44, 185      | 45, 675      | 46, 908      | 48, 540      |
| Water supplied.....gallons..      | 202          | 231          | 574          | 777          |
| Per capita.....do.....            | 49, 162, 000 | 47, 182, 000 | 44, 114, 000 | 45, 267, 000 |
|                                   | 181          | 173          | 165          | 164          |

"With an increase since 1894 of 4,355 in the number of premises supplied with water the total daily supply is reduced by about 4,000,000 gallons, and the per capita metering of about 500 large consumers of the character mentioned above.

"As the law now stands no further extension of the meter system can be made, since all premises excepting dwellings and small shops are metered. To further curtail waste, meters must be gradually applied to all consumers. It is the current belief that the excessive consumption here arises from large use and waste of water in the United States buildings and grounds. While undoubtedly there is some waste in the departmental buildings, there are good grounds for believing that it is very much less than suspected, and that the waste is largely due to defective plumbing, and wilful, deliberate, or careless waste in dwellings. The high service, as above stated, supplies a purely residential section, composed largely of modern houses, and served through comparatively new mains and services. The natural expectations would be for a smaller rate of waste than for the whole city. On the contrary the percentage of waste, as shown by the water supplied from midnight to 4 a. m., is noticeably larger than for the low service containing the business section, and a much larger proportion of older houses, plumbing, services, and mains. The unavoidable conclusion is that there is more waste in the residential section and in dwellings than in business or commercial premises, and that the United States departments, though, as stated earlier, entitled by law to use or waste as much water as they desire, in fact do not waste as much or at the same rate as the resident population.

"This waste can be reached and corrected only by meters. House-to-house inspection has been found to avail little, besides being extremely offensive to citizens. It has been found impracticable to correct leaks and waste except by cutting off the water, a very harsh measure, and only to be resorted to in exceptional cases. It is the numerous but very small leaks that cause the great waste, and to cut off the water for such would entail many hardships and bitter complaints.

"The water meter makes each householder an inspector of the most effective kind, besides detecting leaks unknown to the consumer and not to be found by an inspector. An instance will illustrate: The second quarterly bill rendered after placing the meter in a hotel in this city produced vigorous complaint of excessive charge and of incorrect meter. After retesting the meter to satisfy the consumer, a series of all-night readings showed such a large midnight registration as to indicate a large waste. With some difficulty the waste was located, and the average daily use was reduced from 53,800 to 32,400 gallons. Without doubt water is wasting in many similar cases of hidden leaks without the slightest benefit to anyone, and such wastes will continue until the use of the meter makes it to the interest of the consumers to seek out and correct their causes.

"From other points of view the use of the meter is desirable or necessary. It is not practicable or possible to so rate by any scheme of assessment as to charge each consumer, even approximately, correctly for the amount of water used. All assessment or flat rates are based upon the size of the building, number and character of fixtures, number of occupants, or some similar data. The amount of water used does not necessarily bear any relation to any of these, and the waste of water certainly does not. It is inconsistent and unjust to rate a modern house, with first-class plumbing and no appreciable waste, on the same basis as a rookery with fixtures leaking continuously and left to run every cold winter night to avoid the freezing of exposed pipes. And yet all assessment schedules give two such houses the same rating, provided they are of the same size or comply equally with some other arbitrary requirement. Such conditions exist in every city. Every assessment schedule bears inequitably and gives rise to many complaints that can be met only by one answer—by the meter system, and no other; consumers pay for what they use and waste, neither more nor less. The sale of water should be conducted upon the same sound business principles as govern the sale of gas, provisions, or any other commodity, bearing in mind always that the proper use of water is to be encouraged. To deliver water throughout a city requires large expenditure. It can never be free, but must be paid for in one way or another, and there is neither justice nor sense in compelling one householder to pay for more than he uses in order that his extravagant, careless, or law-breaking neighbor may pay for less than he uses and wastes."

A number of hydraulic elevators, driven by direct pressure from the middle service mains, have been built during the past year. Water supplied is paid for by measurement, the amount used being recorded by registers attached to the elevator gears.

Owing to trouble resulting from water ram, caused by the quick opening and closing of operating valves on these elevators, an independent main was laid connecting two of the elevators on Fourteenth street with the 24-inch trunk line in Thirteenth street. Since this was done no complaints have been received.

#### DEFECTIVE PRESSURES.

Many well-founded complaints of insufficient pressure on the low-service area have been received during the year. In most cases relief was impossible.

In a few cases an extension of the middle service was made. On the map herewith are indicated the locations where the water pressure at the curb level is less than 20 pounds per square inch.

This trouble has been increasing from year to year, and no marked improvement can be expected until the supply is re-enforced from the north by putting in use the Howard University reservoir.

It is believed that the completion of this work, which now seems assured, will practically eliminate the trouble from defective pressure, unless the waste of water, already beyond reason, should be much increased.

In this connection it may be well to consider here the ultimate capacity of the existing works. This capacity, as determined experimentally in 1897 by Capt. D. D. Gaillard, Corps of Engineers, U. S. A., is 76,500,000 United States gallons in twenty-four hours. It has been found in the past that an increase of available pressure in the mains results in a marked increase in the number of gallons used per capita per diem. Almost immediately on the completion of the 48-inch main, completed in 1890 for the relief of the city, this rate rose to 181.

When the Howard University reservoir is completed and put in use the increase in available head will be much greater than that resulting from the 48-inch main above referred to; and unless radical measures be adopted to decrease the waste of water it would seem necessary to assume a per capita of at least 180. At this rate the ultimate capacity of the existing works would be reached when the population of the District had increased to 425,000.

Assuming 200 gallons per capita, this condition would be reached with a population of 382,500.

The completion of the Howard University reservoir and tunnel is not only absolutely necessary, if satisfactory pressures are to be established over the higher parts of the areas supplied by gravity flow, but the value of the increase in storage volume from 300,000,000 to 600,000,000 gallons is evident.

In case of serious accident to the conduit or head works, or, still worse, to the trunk mains connecting the distributing reservoir and the distribution system of the city, this extra supply of water would be of incalculable value. Under present conditions if for any reason the flow through the four trunk mains entering the city should be interrupted the entire District, except a small part of the high service area, would at once be without water for domestic use or protection from fire. The possibility of this condition arising is increased by the fact that for nearly the whole distance from the distributing reservoir to Rock Creek, about 2 miles, the four mains lie side by side under the same roadway.

#### PUMPING STATION.

No material changes have been made in the machinery at the U street pumping station since the last annual report was submitted.

Smaller plungers were placed in the old "Gaskill" pumping engine, reducing its capacity from 2,500,000 to 1,200,000 gallons per day, and connections were made for running this pump on the "high" service. Owing to two serious breaks in the discharge main inside of the pumping station the pump was so used for only a few days and is now idle, pending the arrival of new and heavier special castings.

After several unsuccessful attempts the ten-day acceptance test of the new 8,000,000 gallon pumping engine was completed. Following is a summary of principal results:

[Date, March 11-21, 1898.]

|                                                                                                                |                          |                    |
|----------------------------------------------------------------------------------------------------------------|--------------------------|--------------------|
| Duration.....                                                                                                  | days..                   | 10                 |
| Mean daily discharge of pumps, plunger displacement.....                                                       | gallons..                | 8, 140, 000        |
| Mean pressure on suction main.....                                                                             | pounds per square inch.. | 6. 74              |
| Mean pressure on discharge main.....                                                                           | do.....                  | 95. 79             |
| Mean net pressure.....                                                                                         | do.....                  | 89. 05             |
| Mean coal burned per day, containing 24 per cent of moisture, pounds.....                                      |                          | 11, 309            |
| Total revolutions of engine.....                                                                               |                          | 540, 680           |
| Duty per 100 pounds of coal actually fired.....                                                                |                          | 123, 405, 000      |
| Moist coal burned per hour.....                                                                                | pounds..                 | 471                |
| Per cent moisture.....                                                                                         |                          | 24                 |
| Dry coal per hour.....                                                                                         | pounds..                 | 459                |
| Per cent ashes.....                                                                                            |                          | 7. 2               |
| Combustible per hour.....                                                                                      |                          | 425                |
| Total foot-pounds of work during test, based on plunger displacement, net water pressure, and revolutions..... |                          | 139, 558, 800, 000 |
| Mean effective horsepower.....                                                                                 |                          | 293. 7             |
| Mean indicated horsepower.....                                                                                 |                          | 323. 8             |
| Moist coal per indicated horsepower per hour.....                                                              |                          | 1. 455             |
| Dry coal per indicated horsepower per hour.....                                                                |                          | 1. 417             |
| Combustible per indicated horsepower per hour.....                                                             |                          | 1. 312             |

# SUMMARY OF GRAPHICAL LOG OF U STREET PUMP HOUSE FOR FISCAL YEAR ENDING JUNE 30, 1898.

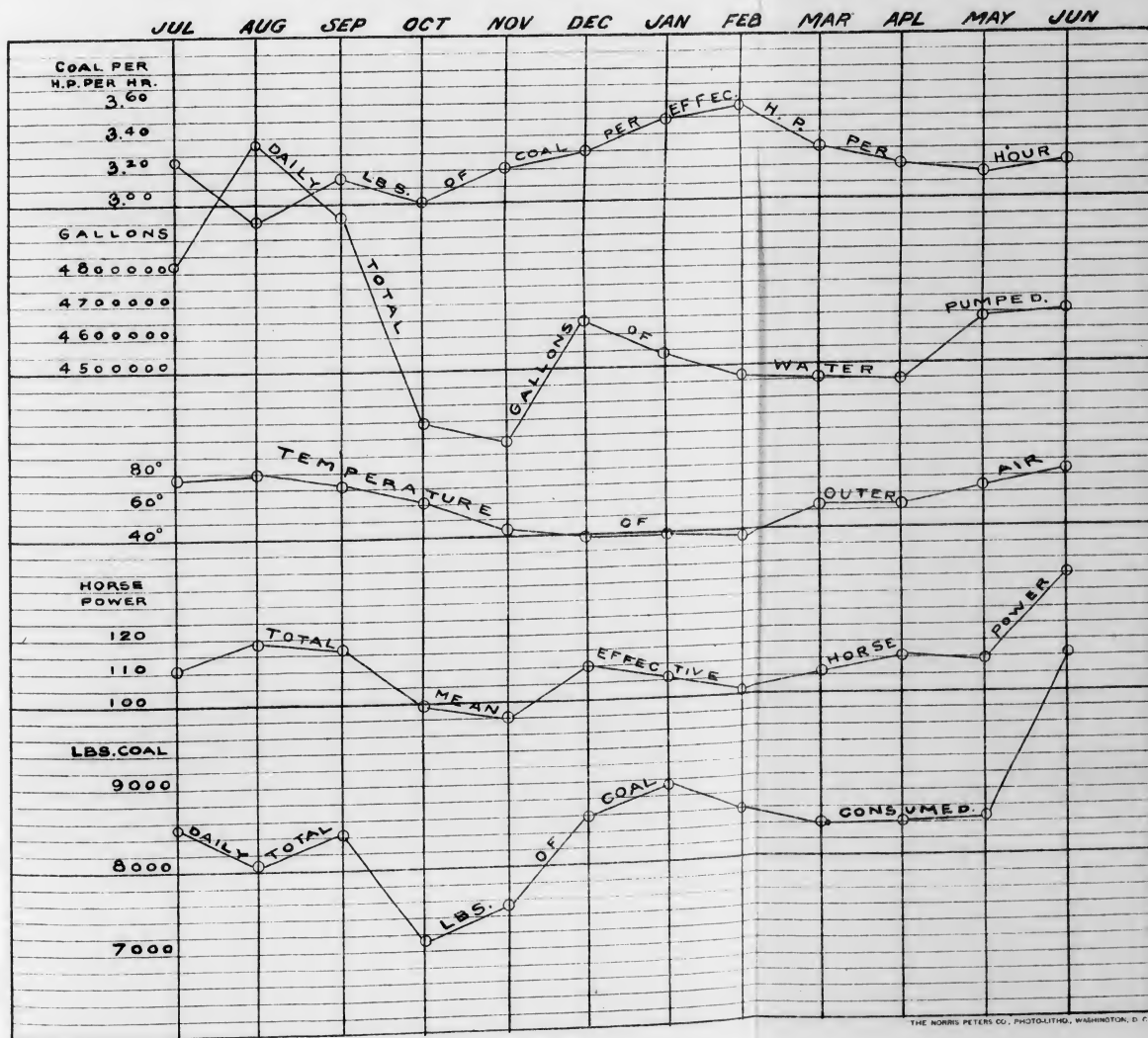




DIAGRAM No.1

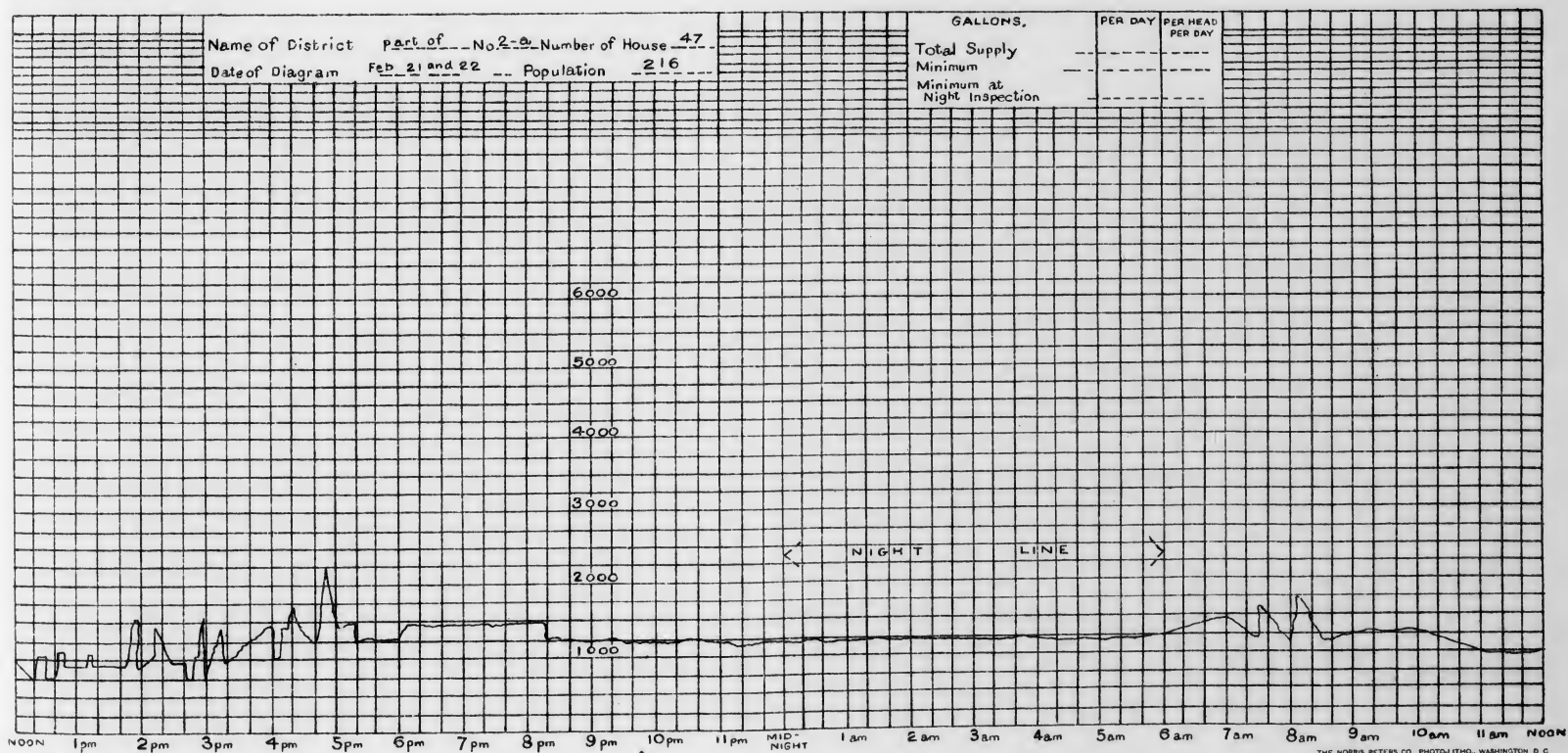
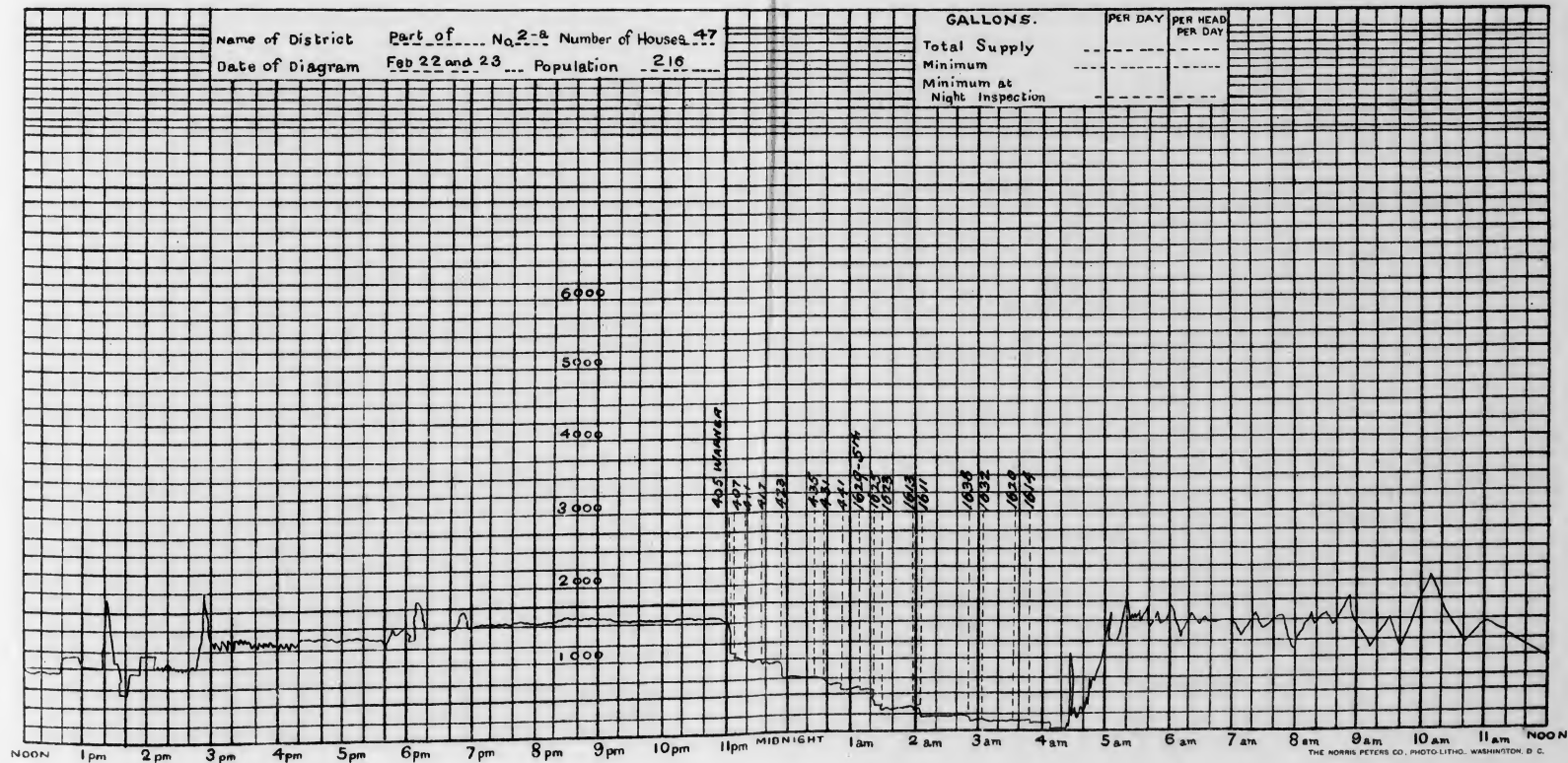
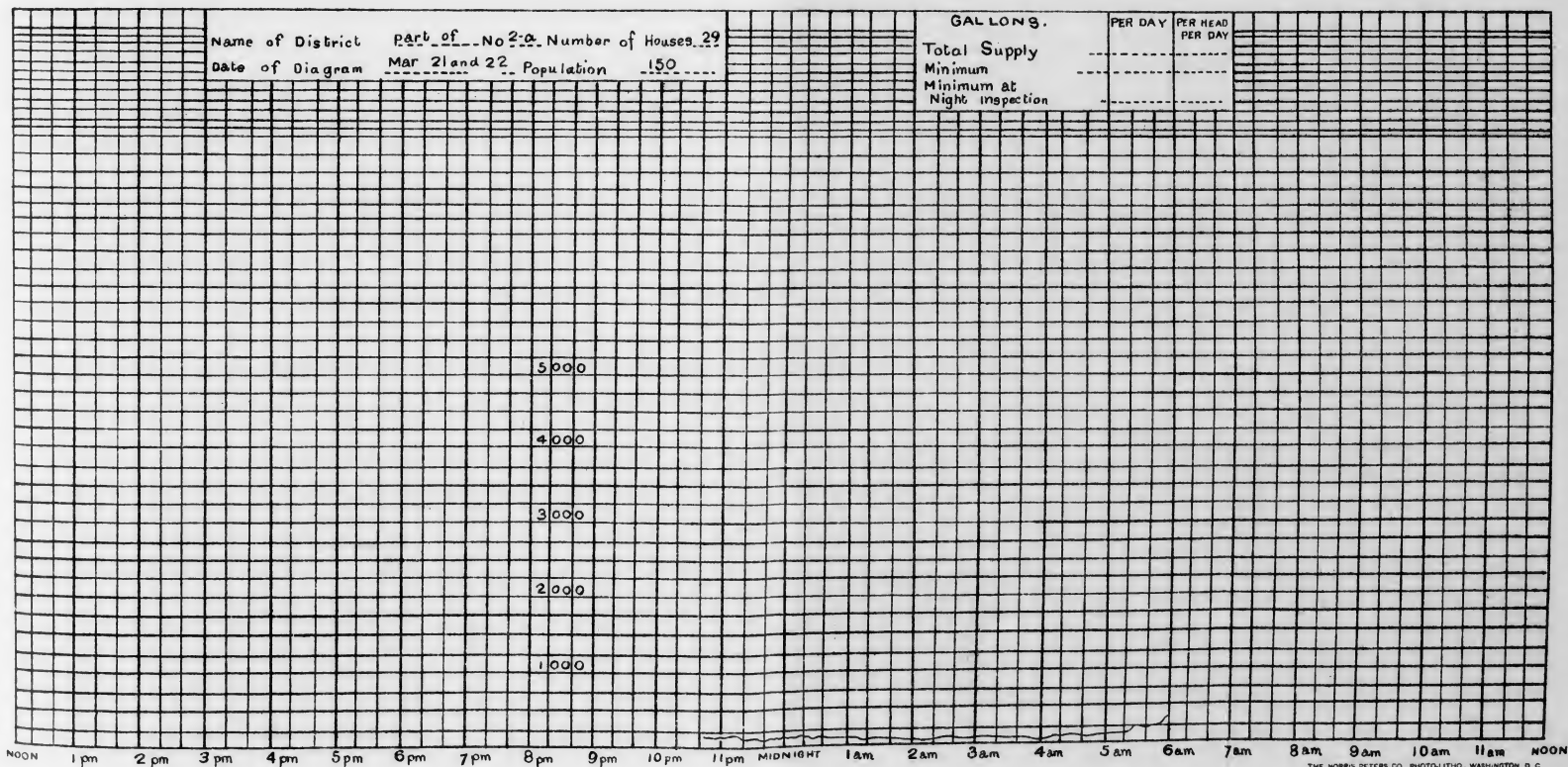


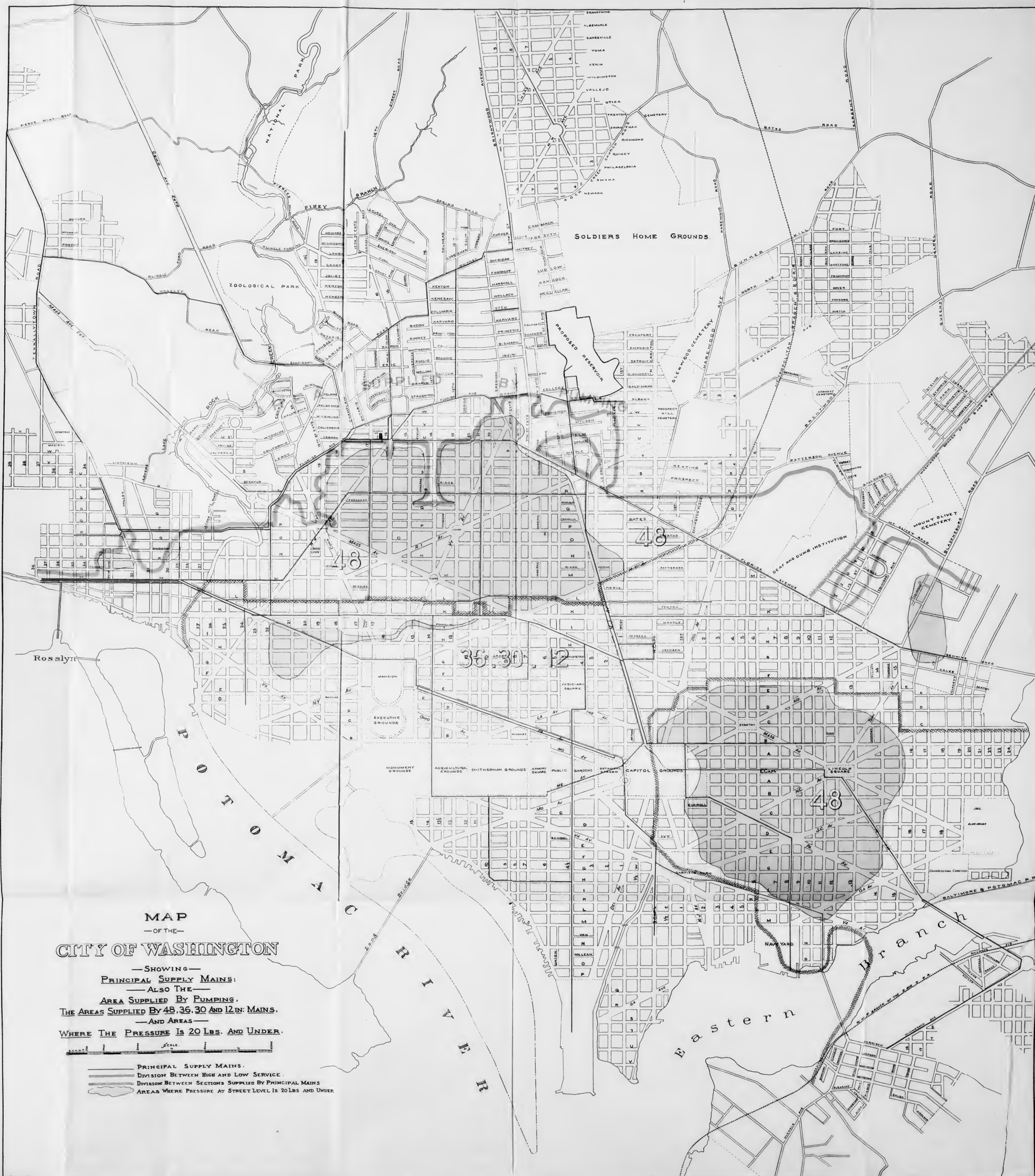


DIAGRAM No.2



# DIAGRAM No.3





MAP  
—OF THE—  
**CITY OF WASHINGTON**

—SHOWING—  
PRINCIPAL SUPPLY MAINS;  
—ALSO THE—  
AREA SUPPLIED BY PUMPING,  
THE AREAS SUPPLIED BY 48, 36, 30 AND 12 IN. MAINS.  
—AND AREAS—  
WHERE THE PRESSURE IS 20 LBS. AND UNDER.

Scale

PRINCIPAL SUPPLY MAINS.  
DIVISION BETWEEN HIGH AND LOW SERVICE.  
DIVISION BETWEEN SECTIONS SUPPLIED BY PRINCIPAL MAINS  
AREAS WHERE PRESSURE AT STREET LEVEL IS 20 LBS. AND UNDER

DIAGRAM



Under the terms of the contract the builders earned a bonus of \$3,450 for excess duty.

There was also conducted a series of duty trials under ordinary service conditions to determine the relative economy of five different kinds of bituminous coals, and a full report of results submitted.

|                                   |           |             |
|-----------------------------------|-----------|-------------|
| Mean daily pumpage for year ..... | gallons.. | 4, 656, 000 |
| Mean hourly .....                 | do.....   | 194, 000    |
| Maximum daily .....               | do.....   | 5, 614, 500 |
| Minimum daily .....               | do.....   | 3, 984, 000 |
| Maximum hourly .....              | do.....   | 351, 000    |
| Minimum hourly .....              | do.....   | 130, 500    |

All water pumped is now drawn from the 48-inch main on R street through a 20-inch main about 1,800 feet long. At the maximum rate per hour given above, a flow of 6 feet per second must be maintained. To avoid serious loss of head an increase in the capacity of the suction main will be necessary in the near future.

The necessity for a reservoir of ample size on the middle service is becoming more and more evident. During some hours of June the pumping was at the rate of over 350,000 gallons per hour. As the rated capacity of our largest engine is but 3,000,000 gallons per day and of the reserve but 7,000,000, the trouble which might result from any derangement of these pumps is evident. There is always a chance of such derangement, and with the direct system now in use a water famine in the upper parts of the city would be the immediate result.

A reservoir would not only overcome this difficulty, but would result indirectly in improved pressures over the higher parts of the low-service area. As the pumps draw their supply direct from the low-service mains, the maximum draft on these mains to supply the middle service now necessarily occurs during the hours of greatest consumption. With a reservoir the hours of maximum pumping could be arranged to occur during the hours of least consumption, thus tending to equalize pressures.

Many improvements have been made in and about the pumping station. A new property yard in the rear of the old one has been bought and inclosed by a 9-foot brick wall and the department stable has been doubled in size. The machine shop has been continued in use, making a large number of minor repairs to machinery, fire hydrants, pumps, etc.

Transmitted herewith are a number of tables, which are self-explanatory.

In this connection I would invite attention to the fact that the cost of laying mains, as shown in Table IV, has again been reduced—the 3-inch from 0.5688 to 0.5375 per foot; the 4-inch from 0.6300 to 0.5679 per foot; the 6-inch from 0.7579 to 0.6745 per foot, and the 12-inch from 1.3086 to 1.2423 per foot.

This result is undoubtedly due to the efforts of Mr. John Fitzgerald, foreman, and his assistants, John McGuire and Daniel Hurley.

Table I, lengths of mains, does not correspond with those published in previous reports. It is made up from all data available in this office, and is believed to be approximately correct.

There is also transmitted herewith a summary of monthly means from the graphical log, made from records kept at the U street pumping station.

The amount of coal burned and the pounds of coal per effective horsepower per hour are based on total coal consumption for all purposes, including heating of buildings and running of electric light and machine shop engines, while the horsepower is the actual effective horsepower of the pumps alone.

The coal per effective horsepower per hour for the pumps, triple-expansion, alone under ordinary conditions (direct service) with a poor grade of West Virginia bituminous coal is about 2.27 pounds.

Under test conditions, with a somewhat better grade of coal, the amount burned per effective horsepower per hour was 1.6 pounds.

Included in the total horsepower is the work done by a 10 by 16 by 7 by 12 compound, duplex, condensing, direct-acting pump, working against a head of 300 feet. The amount of coal used by this pump is not known, but that the general efficiency of the plant is much reduced by it is certain. It is this pump which is to be replaced by the compound, high-duty "Gaskill" engine when pipe connections are completed.

In conclusion, I wish to record my appreciation of the efficient work done by the various employees of the department.

Very respectfully, your obedient servant,

W. A. MCFARLAND,  
Superintendent Water Department.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.

## 140 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

TABLE I.—Summary of the distribution system.

|                                 | In service<br>prior to<br>June 30, 1897. | Added during<br>the fiscal<br>year. | Total<br>June 30,<br>1898. |
|---------------------------------|------------------------------------------|-------------------------------------|----------------------------|
|                                 | <i>Linear feet.</i>                      | <i>Linear feet.</i>                 | <i>Linear feet.</i>        |
| 75 inches diameter .....        | 660                                      |                                     | 660                        |
| 48 inches diameter .....        | 30,000                                   |                                     | 30,000                     |
| 36 inches diameter .....        | 23,180                                   |                                     | 23,180                     |
| 30 inches diameter .....        | 37,720                                   |                                     | 37,720                     |
| 24 inches diameter .....        | 21,510                                   |                                     | 21,510                     |
| 20 inches diameter .....        | 33,170                                   |                                     | 33,170                     |
| 16 inches diameter .....        | 2,460                                    |                                     | 2,460                      |
| 12 inches diameter .....        | 182,442.3                                | 7,697.7                             | 190,140                    |
| 10 inches diameter .....        | 10,255                                   |                                     | 10,255                     |
| Total trunk mains .....         |                                          |                                     | 349,095                    |
| 8 inches diameter .....         | 5,098                                    | 907                                 | 6,005                      |
| 6 inches diameter .....         | 1,239,468.4                              | 52,371.6                            | 1,291,840                  |
| 4 inches diameter .....         | 114,826.8                                | 6,735.2                             | 121,562                    |
| 3 inches diameter .....         | 52,892.6                                 | 2,790.4                             | 55,683                     |
| 2 inches diameter .....         | 2,389.3                                  | 1,632.7                             | 4,022                      |
| 1½ inches diameter .....        | 2,070                                    | 500                                 | 2,570                      |
| Total .....                     |                                          |                                     | 1,481,682                  |
| Grand total .....               | 1,758,142.4                              | 72,634.6                            | 1,830,777                  |
| Stop valves .....               | <i>Number.</i> 3,267                     | <i>Number.</i> 271                  | <i>Number.</i> 3,538       |
| Fire hydrants .....             | 1,807                                    | 75                                  | 1,882                      |
| Public hydrants .....           | 329                                      | 11                                  | 339                        |
| Service connections .....       | 44,936                                   | 33                                  | 44,969                     |
| Taps .....                      | 59,232                                   | 1,872                               | 61,104                     |
| Public wells, deep driven ..... | 21                                       | 10                                  | 31                         |
| Public wells, shallow .....     | 134                                      |                                     | 123                        |
| Horse fountains .....           | 73                                       | 3                                   | 76                         |

*a* Nine public hydrants abandoned.*b* Eleven wells filled.

TABLE II.—Statement showing costs of water mains laid during fiscal year ending June 30, 1898.

| Street.                             | Streets between—                       | Size.          | Length.           | Cost of<br>material. | Cost of<br>labor. | Total<br>cost. |
|-------------------------------------|----------------------------------------|----------------|-------------------|----------------------|-------------------|----------------|
|                                     |                                        | <i>Inches.</i> | <i>Lin. feet.</i> |                      |                   |                |
| Center Thirteenth,<br>Brookland.    | Milwaukee and Newark ...               | 1½             | 450               | \$46.69              | \$60.75           | \$107.44       |
| North side Milwaukee,<br>Brookland. | East from Fifteenth .....              | 1½             | 50                | 2.75                 | 11.60             | 14.35          |
| Center Philadelphia,<br>Brookland.  | Thirteenth and Fourteenth              | 2              | 717.7             | 98.57                | 59.81             | 158.38         |
| Center Fifteenth NW.                | North from Kenesaw ave-<br>nue.        | 2              | 298               | 32.83                | 42.68             | 75.51          |
| Center Eighteenth.                  | A SE. and A NE. ....                   | 2              | 617               | 69.40                | 98.76             | 168.16         |
| Huntoon court SW                    | Four-and-a-half and Union,<br>N and O. | 3              | 313               | 81.59                | 115.54            | 197.13         |
| Alley, reservation 10.              |                                        | 3              | 223.9             | 112.95               | 116.60            | 229.55         |
| Alley, square 624.                  |                                        | 3              | 201               | 57.45                | 68.98             | 126.43         |
| Alley, square 442.                  |                                        | 3              | 85.5              | 46.80                | 51.38             | 98.18          |
| Alley, square 515.                  |                                        | 3              | 334.4             | 95.31                | 119.91            | 215.22         |
| Alley, square 512.                  |                                        | 3              | 220.3             | 52.50                | 81.39             | 133.89         |
| Alley, square 516.                  |                                        | 3              | 253.3             | 125.95               | 166.84            | 292.79         |
| Alley, square 435.                  |                                        | 3              | 425               | 123.42               | 123.65            | 247.07         |
| Alley, square 556.                  |                                        | 3              | 435.5             | 62.12                | 163.31            | 225.43         |
| Alley, square 445.                  |                                        | 4              | 150.3             | 86.44                | 100.04            | 186.48         |
| Alley, square 571.                  |                                        | 4              | 353.8             | 107.24               | 98.76             | 206.04         |
| Alley, square 378.                  |                                        | 4              | 231               | 106.85               | 93.61             | 200.46         |
| Alley, square 14.                   |                                        | 4              | 416.8             | 153.63               | 162.32            | 315.95         |
| Alley, square 81.                   |                                        | 4              | 340               | 121.53               | 105.42            | 226.95         |
| Alley, square 445.                  |                                        | 4              | 104.9             | 19.70                | 42.82             | 62.52          |
| Alley, square 786.                  |                                        | 4              | 298               | 82.31                | 108.54            | 190.85         |
| Alley, square 785.                  |                                        | 4              | 48.4              | 13.28                | 16.08             | 29.36          |
| Alley, square 536.                  |                                        | 4              | 186.8             | 64.18                | 60.45             | 124.63         |
| Alley, square 352.                  |                                        | 4              | 716               | 222.73               | 249.12            | 471.85         |
| Alley, square 969.                  |                                        | 4              | 321.8             | 99.79                | 92.29             | 192.08         |
| Alley, square 569.                  |                                        | 4              | 394.7             | 113.35               | 79.19             | 192.54         |
| Alley, square 571.                  |                                        | 4              | 249.1             | 67.38                | 72.04             | 139.42         |
| Alley, square 449.                  |                                        | 4              | 317               | 132.45               | 108.26            | 240.71         |

*a* Half cost paid by applicant.



TABLE II.—Statement showing costs of water mains laid during fiscal year ending June 30, 1898—Continued.

| Street.                                         | Streets between—                                | Size.          | Length.           | Cost of material. | Cost of labor. | Total cost. |
|-------------------------------------------------|-------------------------------------------------|----------------|-------------------|-------------------|----------------|-------------|
|                                                 |                                                 | <i>Inches.</i> | <i>Lin. feet.</i> |                   |                |             |
| Alley, square 448.....                          | .....                                           | 4              | 579               | \$163.03          | \$192.86       | \$355.89    |
| Alley, square 467.....                          | .....                                           | 4              | 557.7             | 158.15            | 190.81         | 348.96      |
| Alley, square south of 104.....                 | .....                                           | 4              | 493               | 86.87             | 92.74          | 179.61      |
| Alley, reservation 11.....                      | .....                                           | 4              | 204.8             | 61.70             | 75.11          | 136.81      |
| Alley, Pleasant Plains.....                     | Fourteenth and Fifteenth, Kenesaw and Park..... | 4              | 219.5             | 86.84             | 52.41          | 139.25      |
| North side Virginia avenue SE.....              | Seventh and Eighth.....                         | 6              | 347.9             | 133.91            | 68.59          | 202.50      |
| West side Twenty-sixth NW.....                  | Pennsylvania avenue and M.....                  | 6              | 298.7             | 107.96            | 116.62         | 224.58      |
| Center N SE.....                                | Ninth and Tenth.....                            | 6              | 475.1             | 218.30            | 100.06         | 318.36      |
| Crossing M SE.....                              | Intersection of Sixth.....                      |                |                   |                   |                |             |
| Center Trinidad avenue NE.....                  | Levis and King.....                             | 6              | 561.8             | 239.20            | 159.75         | 398.95      |
| South side U NW.....                            | East from Le Droit avenue.....                  | 6              | 412.2             | 211.08            | 57.69          | 268.77      |
| Center Omaha.....                               | New Hampshire and Eighth.....                   | 6              | 3,335.5           | 1,385.58          | 668.02         | 2,053.60    |
| Center Eighth.....                              | Omaha and Trenton.....                          |                |                   |                   |                |             |
| Center Savannah.....                            | Eighth and Kansas avenue.....                   |                |                   |                   |                |             |
| Center Trenton.....                             | do.....                                         |                |                   |                   |                |             |
| East side Kansas avenue, Petworth.....          | Savannah and Trenton.....                       | 6              | 449               | 169.41            | 89.50          | 258.91      |
| Center Oak NW.....                              | Harewood and Linden.....                        |                |                   |                   |                |             |
| East side Sixth NE.....                         | T and Seaton.....                               |                |                   |                   |                |             |
| Center Seaton NE.....                           | East from Sixth.....                            |                |                   |                   |                |             |
| West side North Capitol.....                    | Massachusetts avenue and G.....                 | 6              | 392.5             | 122.37            | 116.63         | 239.00      |
| North side L NW.....                            | Nineteenth and Twentieth.....                   | 6              | 412.2             | 200.54            | 207.34         | 407.88      |
| East side Columbia road.....                    | Eighteenth and Nineteenth.....                  | 6              | 1,356.5           | 504.36            | 291.93         | 796.29      |
| North side C SE.....                            | South Capitol and New Jersey.....               | 6              | 191               | 105.69            | 74.05          | 179.74      |
| Center L SW.....                                | East from Third.....                            | 6              | 313.4             | 98.56             | 71.56          | 170.12      |
| East side Eighteenth NW.....                    | Columbia and Belmont.....                       | 6              | 540.8             | 214.61            | 90.87          | 305.48      |
| South side Richmond.....                        | Illinois avenue and Rock Creek Church road..... | 6              | 2,420             | 926.13            | 403.36         | 1,329.49    |
| Center Third.....                               | Richmond and Quincy.....                        |                |                   |                   |                |             |
| Center Quincy.....                              | Third and Rock Creek Church road.....           |                |                   |                   |                |             |
| West side Rock Creek Church road, Petworth..... | Richmond and Quincy.....                        |                |                   |                   |                |             |
| South side M NW.....                            | Thirty-third and Thirty-sixth.....              | 6              | 1,239.6           | 551.11            | 419.04         | 970.15      |
| Center Sherman avenue.....                      | Farragut and Whitney.....                       | 6              | 669.5             | 270.60            | 177.50         | 448.10      |
| North side M NW.....                            | Thirty-first and Thirty-second.....             | 6              | 452.3             | 120.18            | 118.44         | 238.62      |
| West side First SW.....                         | I and K.....                                    | 6              | 356.4             | 164.05            | 116.84         | 280.89      |
| Center Pickford place NE.....                   | F and G.....                                    | 6              | 554.5             | 274.35            | 106.87         | 381.22      |
| Center Sixth NE.....                            | H and I.....                                    | 6              | 360.5             | 115.36            | 68.31          | 183.67      |
| Center Linden NW.....                           | Elm and Wilson.....                             | 6              | 373.5             | 135.46            | 100.22         | 235.68      |
| West side Twelfth SE.....                       | A and B.....                                    | 6              | 569.5             | 217.93            | 127.07         | 345.00      |
| North side Prospect NW.....                     | Thirty-sixth and Thirty-seventh.....            | 6              | 305.4             | 119.58            | 90.09          | 209.67      |
| North and south sides New York avenue NW.....   | Twenty-first and Twenty-second.....             | 6              | 1,432.8           | 596.04            | 322.10         | 918.14      |
| Center Emporia, Brookland.....                  | Thirteenth and Fourteenth.....                  | 6              | 661.5             | 257.94            | 86.50          | 344.44      |
| Center Bates NW.....                            | North Capitol and First.....                    | 6              | 557.8             | 194.94            | 107.62         | 302.56      |
| Center Erie, Brightwood Park.....               | Eighth and Ninth.....                           | 6              | 490.4             | 217.51            | 109.78         | 327.29      |
| Center Concord, Brookland.....                  | Twelfth and Thirteenth.....                     | 6              | 660.3             | 260.93            | 154.04         | 414.97      |
| Center Lincoln avenue.....                      | South from T.....                               | 6              | 450               | 195.56            | 123.40         | 318.96      |
| Center Grant, Mount Pleasant.....               | School and Pine.....                            | 6              | 574               | 161.01            | 107.26         | 268.27      |
| Center Madison NW.....                          | M and N.....                                    | 6              | 523.9             | 320.59            | 255.59         | 576.51      |
|                                                 | Thirty-second and Thirty-fifth.....             | 6              | 217.1             | 124.32            | 96.57          | 220.89      |
| East side Twenty-first NW.....                  | L and M.....                                    | 6              | 654.6             | 254.51            | 239.24         | 493.75      |
| Center Third SW.....                            | C and D.....                                    | 6              | 218.6             | 110.03            | 104.61         | 214.64      |

α Half cost paid by applicant.

TABLE II.—Statement showing costs of water mains laid during fiscal year ending June 30, 1898—Continued.

| Street.                             | Streets between—                      | Size.   | Length.    | Cost of material | Cost of labor. | Total cost. |
|-------------------------------------|---------------------------------------|---------|------------|------------------|----------------|-------------|
|                                     |                                       | Inches. | Lin. feet. |                  |                |             |
| Center Nineteenth.....              | Columbia and Kalorama.....            | 6       | 990.4      | \$447.83         | \$263.34       | \$701.17    |
| North side Kalorama avenue.         | Nineteenth and Twentieth.....         |         |            |                  |                |             |
| Center Twentieth NW.                | North from Kalorama.....              |         |            |                  |                |             |
| West side Third SW .....            | L and M.....                          | 6       | 373.7      | 149.29           | 84.98          | 234.27      |
| Center Sixteenth NW .....           | North from Kenesaw avenue.            | 6       | 264.2      | 157.92           | 71.24          | 229.16      |
| Center Breed's Terrace.             | Mount Pleasant .....                  | 6       | 317        | 131.19           | 67.50          | 198.69      |
| East side Eighteenth NW.            | Columbia and Kalorama avenue.         | 6       | 532.6      | 159.03           | 111.17         | 270.20      |
| Center Tenth NE.....                | H and I.....                          | 6       | 366.3      | 110.31           | 78.32          | 188.63      |
| Center Twelfth, Brookland.          | North from Detroit.....               | 6       | 145.4      | 74.08            | 31.79          | 105.87      |
| Center Piney Branch road.           | North from Howard avenue.             | 6       | 177        | 67.56            | 55.33          | 122.89      |
| North side M NW.....                | Thirty-third and Thirty-fourth.       | 6       | 550        | 320.51           | 199.54         | 520.05      |
| Center Eslin NW.....                | Lamar and Spring road....             | 6       | 273        | 97.74            | 79.41          | 177.15      |
| Center Howard court NW.             | Oak and Wilson .....                  | 6       | 192.6      | 97.13            | 61.75          | 158.88      |
| North side E NW .....               | Twenty-third and Twenty-fourth.       | 6       | 347        | 161.64           | 116.54         | 278.18      |
| South side D SE.....                | New Jersey avenue and South Capitol.  | 6       | 369        | 144.68           | 228.44         | 373.12      |
| West side First SE.....             | L and M.....                          | 6       | 336        | 119.07           | 115.45         | 234.52      |
| North side Q NW.....                | Eight and Ninth .....                 | 6       | 261        | 124.52           | 122.43         | 246.95      |
| Hanover court NW.....               | North Capitol and First....           | 6       | 135        | 56.49            | 33.00          | 89.49       |
| North side Richmond, Petworth.      | Eight and Brightwood avenue.          | 6       | 557        | 210.18           | 104.62         | 314.80      |
| East side North Capitol.            | Randolph and S .....                  | 6       | 415.7      | 311.46           | 132.22         | 443.68      |
| Center Twenty-second NW.            | R and Decatur.....                    | 6       | 225.6      | 87.14            | 52.58          | 139.72      |
| Alley, square 628 .....             | .....                                 | 6       | 181        | 99.94            | 72.40          | 172.34      |
| East side Delaware avenue.          | F and G .....                         | 6       | 510        | 316.11           | 197.91         | 514.02      |
| Center F SW .....                   | First and Delaware avenue.            |         |            |                  |                |             |
| West side First NW .....            | E and F .....                         |         |            |                  |                |             |
| South side Newark.....              | New Hampshire and Seventh.            | 6       | 686        | 339.18           | 161.84         | 501.02      |
| Center Seventh, Petworth.           | Newark and Rock Creek Church road.    |         |            |                  |                |             |
| West side Sixth NE.....             | B and C .....                         |         |            |                  |                |             |
| North side F.....                   | First and Second .....                | 6       | 844        | 368.93           | 182.18         | 551.11      |
| East side First SE.....             | F and Heckman .....                   | 6       | 1,321.5    | 244.23           | 212.15         | 456.38      |
| Center Joliet, Brookland.           | Twelfth and Fourteenth....            |         |            |                  |                |             |
| Center Hartford, Brookland.         | East from Thirteenth .....            |         |            |                  |                |             |
| Center Fifth NW.....                | Pomeroy and Wilson .....              | 6       | 368.7      | 200.64           | 95.16          | 295.80      |
| Center Elm NW.....                  | Larch and Linden .....                | 6       | 345.5      | 104.50           | 81.83          | 186.33      |
| Center Marshall NW...               | Sherman and Brightwood avenues.       | 6       | 864.5      | 333.79           | 176.83         | 510.62      |
| Center Sherman avenue NW.           | Farragut and Marshall ....            | 6       | 315        | 116.98           | 59.27          | 176.25      |
| Center California avenue NW.        | East from Phelps.....                 | 6       | 117        | 103.57           | 44.94          | 148.51      |
| Center Thirteenth NW.               | Kenesaw and Kenyon .....              | 6       | 373        | 173.97           | 88.76          | 262.73      |
| Center Sixth NW .....               | Lincoln and Howard avenue.            | 6       | 687.6      | 207.80           | 137.98         | 345.78      |
| Center Wallach NW ..                | Thirteenth and Sherman avenue.        | 6       | 133        | 54.54            | 39.71          | 94.25       |
| North side Wyoming avenue NW.       | Columbia road and Connecticut avenue. | 6       | 671.4      | 403.07           | 246.42         | 649.49      |
| Center Austin.....                  | Armesleigh Park.....                  | 6       | 1,025.5    | 437.83           | 201.02         | 638.85      |
| Center Thirty-ninth .....           | .....do.....                          |         |            |                  |                |             |
| East and west sides Thirty-sixth.   | O and P .....                         |         |            |                  |                |             |
| South side P NW.....                | Thirty-fifth and Thirty-sixth.        | 6       | 1,127      | 548.39           | 283.91         | 832.30      |
| North side G NE.....                | North Capitol and First....           | 6       | 553        | 234.97           | 198.98         | 432.95      |
| Alley, square 677 .....             | .....                                 | 6       | 229.6      | 113.84           | 105.78         | 219.62      |
| South side Massachusetts avenue NW. | Twentieth and Twenty-first.           |         |            |                  |                |             |
| South side Pennsylvania avenue NW.  | West from Ninth .....                 |         |            |                  |                |             |
| West side Ninth SE....              | Pennsylvania avenue and E             | 6       | 236.9      | 81.07            | 66.42          | 147.49      |
| South side R NW.....                | Third and Fourth .....                |         |            |                  |                |             |
| Center Omaha, Brookland.            | East from Twelfth .....               |         |            |                  |                |             |



TABLE II.—Statement showing costs of water mains laid during fiscal year ending June 30, 1898—Continued.

| Street.                                                                          | Streets between—                            | Size.          | Length.           | Cost of material. | Cost of labor. | Total cost. |
|----------------------------------------------------------------------------------|---------------------------------------------|----------------|-------------------|-------------------|----------------|-------------|
|                                                                                  |                                             | <i>Inches.</i> | <i>Lin. feet.</i> |                   |                |             |
| South side Clifton N W.                                                          | Thirteenth and Fourteenth                   | 6              | 722.3             | \$320.06          | \$302.79       | \$632.75    |
| Center C SE.                                                                     | Eighth and Ninth                            | 6              | 343.8             | 112.44            | 92.75          | 205.19      |
| East side First SE.                                                              | G and Canal                                 | 6              | 100.2             | 73.46             | 47.98          | 121.44      |
| Center O N W.                                                                    | North Capitol and First                     | 6              | 818.9             | 242.29            | 129.00         | 371.29      |
| Center Twentieth N W.                                                            | Wyoming and Kalorama                        | 6              | 396.8             | 188.28            | 105.94         | 294.22      |
| East side Center                                                                 | Breed's Terrace and Fourteenth-street road. | 6              | 300               | 89.58             | 72.94          | 162.52      |
| South side Massachusetts avenue N W.                                             | West from Twenty-third                      | 6              | 522.9             | 193.14            | 148.52         | 309.66      |
| North side O N W.                                                                | Thirty-sixth and Thirty-seventh.            | 6              | 301.5             | 123.57            | 122.91         | 246.48      |
| West side Delaware avenue S W.                                                   | L and M                                     | 6              | 391.5             | 136.94            | 112.60         | 239.54      |
| Center Twentieth N W.                                                            | South from E.                               | 6              | 193               | 70.04             | 67.89          | 137.93      |
| East side First S W.                                                             | M and N                                     | 6              | 673.4             | 261.62            | 197.77         | 459.39      |
| East side Fourteenth N W.                                                        | Clifton to Roanoke                          | 12             | 496               | 489.19            | 203.30         | 692.49      |
| South side Princeton N W.                                                        | Thirteenth and Fourteenth                   | 12             | 767.7             | 808.12            | 341.64         | 1,149.76    |
| Center Illinois avenue, Petworth.                                                | Richmond and Flint                          | 12             | 6,434             | 6,031.89          | 1,425.31       | 7,457.20    |
| <i>Connections, valves, blow-offs, etc.</i>                                      |                                             |                |                   |                   |                |             |
| Second between M and N S W., and Delaware avenue between M and N S W.            |                                             | 3              | 157.2             | 77.88             | 77.88          | 155.76      |
| Decatur place between North Capitol and First N E. (valve)                       |                                             | 3              | 3                 | 14.88             | 15.56          | 30.44       |
| Square 753 (valve)                                                               |                                             | 3              | 15                | 63.76             | 60.10          | 123.86      |
| Square 636 (blow-off)                                                            |                                             | 3              | 3                 | 10.89             | 10.25          | 21.14       |
| Snows court (blow-off)                                                           |                                             | 3              | 3                 | 12.53             | 5.88           | 18.41       |
| Thirty-second and N N W. (valve)                                                 |                                             | 4              | 2                 | 11.90             | 9.77           | 21.67       |
| Eighteenth and K N W.                                                            |                                             | 4              | 110               | 81.81             | 61.14          | 142.95      |
| Seventeenth and Willard N W.                                                     |                                             | 6              | 16.5              | 28.52             | 42.26          | 70.78       |
| Fourteenth and B N E.                                                            |                                             | 6              | 43                | 12.97             | 18.82          | 31.79       |
| South Capitol and C.                                                             |                                             | 6              | 91.6              | 108.74            | 50.32          | 167.06      |
| West side Sixteenth between T and U N W (valve)                                  |                                             | 6              | 4                 | 37.60             | 26.88          | 64.48       |
| Linden and Pomeroy N W (valve)                                                   |                                             | 6              | 2                 | 19.49             | 13.43          | 32.92       |
| West side Sixteenth between S and T N W (valve)                                  |                                             | 6              | 116               | 84.25             | 73.01          | 157.26      |
| East side Sixteenth between T and Pierce N W (valve)                             |                                             | 6              | 6                 | 82.62             | 22.46          | 105.08      |
| Harewood and Spruce N W (valve)                                                  |                                             | 6              | 5                 | 55.69             | 6.60           | 62.29       |
| East side Sixteenth between T and U N W (valve)                                  |                                             | 6              | 2                 | 17.05             | 7.00           | 24.05       |
| Q between Eleventh and Twelfth N E.                                              |                                             | 6              | 3                 | 15.17             | 12.75          | 27.92       |
| Fourteenth between Q and R N W.                                                  |                                             | 6              | 33                | 53.23             | 42.81          | 96.04       |
| Lowering mains.                                                                  |                                             |                |                   |                   | 289.56         | 289.56      |
| Unfinished mains June 30, 1897.                                                  |                                             |                |                   | 2.50              | 330.48         | 332.98      |
| Total                                                                            |                                             |                |                   | 30,600.24         | 18,684.00      | 49,284.24   |
| Cost of laying mains, connections, etc., including repairs to improved pavements |                                             |                |                   | 30,600.24         | 18,684.00      | 49,284.24   |
| Cost of erecting fire hydrants, including repairs to improved pavements          |                                             |                |                   | 4,068.46          | 1,126.65       | 5,195.11    |
| Cost of superintendence and engineering                                          |                                             |                |                   |                   | 3,184.29       | 3,184.29    |
| Total                                                                            |                                             |                |                   | 34,668.70         | 22,994.94      | 57,663.64   |

a 17.04 per cent should be added to the cost of labor to attain the actual amount expended for labor, superintendence, and engineering.

TABLE III.—Statement of the lengths and cost of water mains laid from July 1, 1878, to June 30, 1898.

| Fiscal year. | 36-inch.          | 24-inch.          | 20-inch.          | 16-inch.          | 12-inch.          | 10-inch.          | 8-inch.           |
|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|              | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> |
| 1878         | 39.5              |                   |                   |                   | 3,719             |                   |                   |
| 1879         |                   |                   |                   |                   | 7,409             |                   |                   |
| 1880         |                   |                   |                   |                   |                   |                   |                   |
| 1881         |                   |                   |                   |                   |                   |                   |                   |
| 1882         |                   |                   |                   |                   | 1,625             |                   | 26                |
| 1883         |                   |                   |                   |                   | 1,038             |                   |                   |
| 1884         |                   |                   |                   |                   | 963               |                   |                   |
| 1885         |                   |                   |                   |                   | 1,938             | 791               |                   |
| 1886         |                   |                   |                   |                   | b 1,124           | a 2,998           |                   |
| 1887         |                   |                   | a 4,835           |                   | 731               |                   |                   |
| 1888         |                   | 2,312             | 5,140             |                   | 5,626             | 2,784             |                   |
| 1889         |                   |                   |                   |                   |                   |                   |                   |
| 1890         |                   |                   |                   |                   | c 5,201           |                   |                   |
| 1891         |                   |                   |                   |                   | c 10,163          |                   |                   |
| 1892         |                   |                   | 2,926             | 2,500             | 6,473             |                   |                   |
| 1893         |                   |                   | 278               |                   | 39,386            |                   |                   |
| 1894         |                   |                   |                   |                   | 27,731            |                   |                   |
| 1895         |                   | 6,617             | 8,874             |                   | 11,873            |                   |                   |
| 1896         |                   | 294               | 2,180             |                   | 6,877             |                   |                   |
| 1897         |                   |                   |                   |                   | 7,698             |                   |                   |
| 1898         |                   |                   |                   |                   |                   |                   | 1907              |
| Total        | 39.5              | 9,223             | 24,233            | 2,500             | 139,575           | 6,573             | 933               |

| Fiscal year. | 6-inch.           | 4-inch.           | 3-inch.           | 2-inch.           | 1½-inch.          | Total.            | Cost.       |
|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|
|              | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> |             |
| 1878         | 12,781            | 30                |                   |                   |                   | 16,569.5          | \$14,846.20 |
| 1879         | 8,516             | 1,397             |                   |                   |                   | 17,322            | 19,436.03   |
| 1880         | d 3,024           |                   |                   |                   |                   | 3,024             |             |
| 1881         | 3,709             |                   |                   |                   |                   | 3,709             | 3,110.70    |
| 1882         | 1,920             |                   |                   |                   |                   | 1,920             | 1,626.43    |
| 1883         | 4,084             |                   |                   |                   |                   | 5,735             | 8,073.70    |
| 1884         | 8,972             |                   |                   |                   |                   | 10,010            | 10,492.51   |
| 1885         | 27,766            | 358               | 485               |                   |                   | 29,572            | 25,865.35   |
| 1886         | 35,192            |                   | 6,623             |                   |                   | 44,544            | 40,025.10   |
| 1887         | 30,041            | 292               | 7,124             |                   |                   | 40,414            | 56,951.00   |
| 1888         | 9,123             | 9,148             | 3,937             |                   |                   | 22,939            | 17,626.63   |
| 1889         | 36,742            | 6,571             | 8,753             |                   |                   | 67,928            | 79,842.16   |
| 1890         | c 34,737          | c 2,856           | 2,855             |                   |                   | 40,448            | 19,113.54   |
| 1891         | e 56,893          | c 3,142           | e 11,013          |                   |                   | 76,249            | 49,702.65   |
| 1892         | e 88,709.5        | c 3,342           | 1,286             |                   |                   | 108,926.5         | 74,733.04   |
| 1893         | e 54,173.5        | e 8,336.5         | c 3,458.5         |                   |                   | 72,441.5          | 56,339.39   |
| 1894         | 86,632.5          | 12,832            | 2,918.5           |                   |                   | 142,047           | 126,599.55  |
| 1895         | f 103,785.5       | 5,442             | f 2,733           |                   |                   | 146,308.5         | 134,502.31  |
| 1896         | g 61,464.5        | g 1,738           | g 3,262.5         |                   |                   | 87,506            | 89,395.12   |
| 1897         | h 71,266.5        | h 10,595          | 992.5             |                   | 2,104             | 94,015            | 77,954.81   |
| 1898         | i 52,371.5        | i 6,735           | i 2,790.5         | 1,633             | i 500             | 72,635            | 48,661.70   |
| Total        | 791,903.5         | 72,814.5          | 58,231.5          | 1,633             | 2,604             | 1,110,263         | 954,397.92  |

a Cost of laying intersections not included herein.

b 1,074 feet laid to Congressional Library, cost not included herein.

c 45,246 feet laid under permit system, cost not included herein.

d Laid on Road street, Georgetown, to replace old cement pipe.

e 434 feet laid under permit system, and 1,939 feet used for connections to fire hydrants, cost not included herein.

f 14,790 feet laid under permit system, and 3,406 feet used for connections to fire hydrants, cost not included herein.

g 18,199.55 feet laid under permit system, and 1,004 feet used for connections to fire hydrants, cost not included herein.

h 1,837 feet of 6-inch and 3,656 feet of 4-inch laid under permit system, and 696 feet used for connections to fire hydrants, cost not included herein.

i 907 feet of 8-inch, 3,480 feet of 6-inch, 389 feet of 4-inch, 107 feet of 3-inch, 146 feet of 1½-inch laid under permit system, and 1,305 feet used for connections to fire hydrants, cost not included herein.

TABLE IV.—Average cost per foot for laying mains of various sizes during the fiscal year 1897-98.

| Size.                    | Linear feet. | Cost of material. | Cost of labor. | Cost of superintendence and engineering. | Total cost. |
|--------------------------|--------------|-------------------|----------------|------------------------------------------|-------------|
| 1½ inch diameter .....   | 500          | \$0.0988          | \$0.1447       | \$0.0245                                 | \$0.2680    |
| 2 inches diameter .....  | 1,632.7      | .1536             | .1232          | .0210                                    | .2978       |
| 3 inches diameter .....  | 2,541.9      | .2422             | .2523          | .0430                                    | .5375       |
| 4 inches diameter .....  | 6,077.7      | .2879             | .2385          | .0406                                    | .5670       |
| 6 inches diameter .....  | 46,736.5     | .4012             | .2335          | .0398                                    | .6745       |
| 12 inches diameter ..... | 7,697.7      | .9490             | .2506          | .0427                                    | 1.2423      |

TABLE V.—Average cost per foot for relaying pavements during the fiscal year 1897-98.

| Size.         | Cobble.      |        | Brick.       |        | Belgian.     |        | Asphalt blocks. |        | Sheet asphalt. |        |
|---------------|--------------|--------|--------------|--------|--------------|--------|-----------------|--------|----------------|--------|
|               | Linear feet. | Cost.  | Linear feet. | Cost.  | Linear feet. | Cost.  | Linear feet.    | Cost.  | Linear feet.   | Cost.  |
| 3-inch .....  | 761          | \$0.12 | .....        | .....  | 91           | \$0.65 | 292             | \$0.60 | 148            | \$0.79 |
| 4-inch .....  | 1,447        | .13    | 135          | \$0.12 | .....        | .....  | 71              | .47    | 353            | .71    |
| 6-inch .....  | 1,869        | .13    | 4,965        | .14    | 266          | .55    | 255             | .59    | 1,369          | .63    |
| 12-inch ..... | .....        | .....  | 451          | .35    | .....        | .....  | .....           | .....  | .....          | .....  |

TABLE VI.—Average daily consumption, middle service.

| Month.          | Gallons.  | Month.         | Gallons.  |
|-----------------|-----------|----------------|-----------|
| 1897.           |           | 1898.          |           |
| July .....      | 3,742,640 | January .....  | 4,390,000 |
| August .....    | 4,980,580 | February ..... | 4,442,540 |
| September ..... | 4,791,000 | March .....    | 5,570,000 |
| October .....   | 4,276,800 | April .....    | 4,300,000 |
| November .....  | 4,201,360 | May .....      | 4,156,600 |
| December .....  | 5,027,450 | June .....     | 4,803,750 |

TABLE VII.—Average daily consumption, high service.

| Month.          | Gallons. | Month.         | Gallons. |
|-----------------|----------|----------------|----------|
| 1897.           |          | 1898.          |          |
| July .....      | 123,030  | January .....  | 116,380  |
| August .....    | 100,250  | February ..... | 130,000  |
| September ..... | 150,800  | March .....    | 109,320  |
| October .....   | 108,190  | April .....    | 128,900  |
| November .....  | 75,970   | May .....      | 114,400  |
| December .....  | 138,640  | June .....     | 217,480  |

TABLE VIII.—Statement of the lengths and costs of water mains laid under the appropriation for the extension of the high-service system of water distribution from July 1, 1893.

| Fiscal year. | 24-inch.          | 20-inch.          | 12-inch.          | 6-inch.           | 4-inch.           | 2-inch.           | 1½-inch.          | Total.            | Cost.      |
|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|
|              | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> | <i>Lin. feet.</i> |            |
| 1893 .....   | .....             | .....             | 2,682             | 2,822.50          | .....             | .....             | .....             | 5,504.50          | \$6,760.16 |
| 1894 .....   | .....             | 278               | 52,789.75         | 14,209            | .....             | .....             | .....             | 67,347.25         | 69,247.27  |
| 1895 .....   | 6,616.75          | .....             | 9,625             | 28,396.25         | 954               | .....             | .....             | 45,592            | 77,716.66  |
| 1896 .....   | 294               | 8,873.50          | 3,788.35          | 12,890.55         | 307.50            | .....             | .....             | 26,153.90         | 46,241.65  |
| 1897 .....   | .....             | 2,180.50          | 3,510.42          | 28,054.85         | 348.35            | .....             | 2,103.80          | 36,197.92         | 31,497.54  |
| 1898 .....   | .....             | .....             | 6,930             | 26,656.50         | 221.5             | 1,015.7           | 500               | 35,323.70         | 27,106.50  |

TABLE IX.—Locations of shallow wells.

## NORTHWEST.

| Location.           | Street or avenue.                                        | Location.           | Street or avenue.                                |
|---------------------|----------------------------------------------------------|---------------------|--------------------------------------------------|
| West side.....      | Thirty-fifth, near T.                                    | Southeast corner..  | Ninth and H.                                     |
| Southwest corner..  | Thirty-fourth, near U.                                   | North side.....     | Louisiana avenue, between Ninth and Tenth.       |
| Northwest corner..  | Thirty-fourth and S.                                     | East side .....     | Thirty-second, near T.                           |
| Southwest corner..  | Thirty-fourth and Q.                                     | Northwest corner..  | Sixth and K.                                     |
| West side.....      | Thirty-second and R.                                     | Northeast corner..  | Sixth and H.                                     |
|                     | Thirty-second, between P and Q.                          | East side .....     | Sixth, between F and G.                          |
| Southeast corner... | Fifth and Ridge.                                         | Southeast corner..  | Thirty-second and Dumbarton.                     |
| Northeast corner... | Vermont avenue and L.                                    |                     | Thirty-third and N.                              |
| Northwest corner... | Thirteenth and M.                                        | West side.....      | Valley, near Q.                                  |
| West side.....      | New Jersey avenue, between M and N.                      | South side.....     | O, between Thirty-first and Thirty-second.       |
| Southeast corner... | New Jersey avenue and Pierce.                            | Northwest corner..  | Twenty-eighth and O.                             |
|                     | Twenty-seventh and K.                                    | Third and L.        |                                                  |
| South side .....    | Twenty-sixth and D.                                      | East side .....     | Eleventh, near G.                                |
|                     | Virginia avenue, between Twenty-first and Twenty-second. | Southeast corner..  | Eleventh and M.                                  |
| North side .....    | T, between Seventeenth and Eighteenth.                   | Northwest corner..  | Tenth and K.                                     |
|                     | New York avenue, between Seventeenth and Eighteenth.     | Northeast corner..  | Tenth and N.                                     |
| Northwest corner..  | Sixteenth and Corcoran.                                  | South side.....     | New York avenue, between Fourth and Fifth.       |
| West side .....     | Seventeenth and K.                                       |                     | New York avenue, between Sixth and Seventh.      |
| Northwest corner..  | Twelfth, between G and H.                                | North side.....     | G, between First and North Capitol.              |
|                     | Twelfth and New York avenue.                             | Northeast corner..  | Third and Indiana avenue.                        |
|                     | Twelfth and Massachusetts avenue.                        | West side.....      | Four-and-a-half, between C and D.                |
| Southwest corner..  | Twelfth and N.                                           | South side .....    | E, between Seventeenth and Eighteenth.           |
| Southeast corner... | Twelfth and Florida avenue.                              | North side.....     | Massachusetts avenue, between Sixth and Seventh. |
| East side .....     | Twelfth and Q.                                           | South side .....    | Wilson, between Third and Fourth.                |
| West side .....     | Sixth, near Lincoln.                                     | Southeast corner..  | Brightwood avenue and Irving.                    |
|                     | Brightwood avenue, south of Whitney.                     | East side .....     | Brightwood avenue, Brightwood.                   |
| Northeast corner .. | Sherman and Sheridan avenues.                            | Southwest corner .. | Eighth and Grant avenue.                         |

## NORTHEAST.

|                     |                                 |                    |                                             |
|---------------------|---------------------------------|--------------------|---------------------------------------------|
| East side .....     | North Capitol, between B and C. | Northwest corner.. | Sixth and C.                                |
| Engine Co. No. 3... | Delaware avenue and C.          | East side .....    | Sixth, between A and B.                     |
| Southeast corner .. | First and K.                    | Northwest corner.. | Eighth and A.                               |
| Northwest corner..  | Third and C.                    | North side.....    | E, between Eighth and Ninth.                |
|                     | Third and Massachusetts avenue. | Northwest corner.. | Eleventh and F.                             |
| Northeast corner .. | Second and G.                   | East side .....    | Lincoln avenue, between S and T.            |
| Northwest corner .. | Fourth and E.                   | Southwest corner.. | North Capitol and Randolph.                 |
| Northeast corner .. | Fourth and East Capitol.        | North side.....    | Keating avenue, near Lincoln avenue.        |
| Southeast corner .. | Fifth and A.                    |                    | Seaton, between Twentieth and Twenty-first. |
| Southeast corner .. | Fifth and D.                    |                    |                                             |
|                     | Second and E.                   |                    |                                             |

## SOUTHWEST.

|                     |                                              |                     |                                       |
|---------------------|----------------------------------------------|---------------------|---------------------------------------|
| North side.....     | Virginia avenue, between Tenth and Eleventh. | Southeast corner .. | Four-and-a-half and Maryland avenue.  |
| Northeast corner .. | Eleventh and F.                              | North side.....     | I, between Four-and-a-half and Sixth. |
| Southeast corner .. | Seventh and I.                               |                     | B, between First and Second.          |
| Northeast corner .. | Seventh and M.                               | Southwest corner..  | South Capitol and N.                  |
| North side.....     | K, between Sixth and Seventh.                | Southeast corner .. | One-half and P.                       |
| East side .....     | M, between Four-and-a-half and Sixth.        |                     |                                       |

TABLE IX.—Locations of shallow wells—Continued.

SOUTHEAST.

| Location.           | Street or avenue.                                  | Location.                             | Street or avenue.                                  |
|---------------------|----------------------------------------------------|---------------------------------------|----------------------------------------------------|
| Southeast corner... | First and K.                                       | Northeast corner ..                   | Ninth and C.                                       |
| North side .....    | O, between One-half and First.                     | Southeast corner ..                   | Ninth and E.                                       |
| Southeast corner... | Third and Pennsylvania avenue.                     | Northwest corner ..                   | Tenth and South Carolina avenue.                   |
| Southwest corner... | Third and C.                                       | South side .....                      | South Carolina avenue, between Tenth and Eleventh. |
| West side .....     | Fourth, near South Carolina avenue.                | East side .....                       | Eleventh, between B and C.                         |
| Southeast corner... | Fourth and C.                                      | South side .....                      | Eleventh, between G and L.                         |
| Northeast corner .. | Fifth and G.                                       | East side .....                       | I, between Eleventh and Twelfth.                   |
| West side .....     | Sixth, between C and Pennsylvania avenue.          | Southwest corner ..                   | Eleventh, between N and O.                         |
| Southwest corner .. | Sixth and B.                                       | East side .....                       | Twelfth and G.                                     |
| Southeast corner .. | Sixth and A.                                       | South side .....                      | Twelfth, between D and E.                          |
| Northwest corner .. | Seventh and B.                                     | East side .....                       | E, between Twelfth and Thirteenth.                 |
| East side .....     | Seventh, between B and C.                          | West side .....                       | Thirteenth, between D and E.                       |
| Northeast corner .. | Seventh and Virginia avenue                        | South side .....                      | L, between Thirteenth and Fourteenth.              |
| Southwest corner .. | Eighth and B.                                      | Southeast corner ..                   | T street, Hilldale.                                |
| West side .....     | Eighth and A.                                      | Stanton and Elvans avenues, Hilldale. |                                                    |
| North side .....    | Nichols avenue, opposite Birney School.            | Northeast corner ..                   | Washington and Pierce, Uniontown.                  |
| South side .....    | Jefferson, between Morris and Fillmore, Uniontown. | Southwest corner ..                   | Harrison and Pierce, Uniontown.                    |
|                     | Fillmore and Jackson, Uniontown.                   | South side .....                      | Harrison and Minnesota avenues, Uniontown.         |
|                     | K, between Thirteenth and Fourteenth, ..           |                                       |                                                    |

TABLE X.—Location of shallow wells filled during the fiscal year ending June 30, 1898.

|                                                      |                                            |
|------------------------------------------------------|--------------------------------------------|
| D street, between Twenty-second and Twenty-third NW. | Sixth street and Maryland avenue SW.       |
| Fifth street, between I and K NW.                    | D street, between Ninth and Tenth SW.      |
| Eighth and F streets NW.                             | Second and I streets SE.                   |
| Caroline street, between Fifteenth and Sixteenth NW. | First and M streets SE.                    |
| B street, between Thirteenth and Fourteenth NE.      | Eighth and I streets SE.                   |
|                                                      | Ninth street and South Carolina avenue SE. |

TABLE XI.—Deep wells driven during the fiscal year ending June 30, 1898.

| Location.                              | Completed. | Depth.       | Material penetrated.  | Depth of rock penetrated. | Analysis of water. | Flow per minute. |
|----------------------------------------|------------|--------------|-----------------------|---------------------------|--------------------|------------------|
|                                        | 1897.      | <i>Feet.</i> |                       | <i>Feet.</i>              |                    | <i>Gallons.</i>  |
| Twelfth and K streets NW .....         | July 13    | 188          | Clay .....            |                           | Good .....         | 12               |
| Eighth street and Florida avenue NW.   | July 26    | 103          | Clay and rock .....   | 68                        | Bad .....          | 9                |
| Lincoln avenue and Prospect street NE. | Aug. 7     | 162          | .....do .....         | 14                        | Good .....         | 7.50             |
| Seventh and H streets SW .....         | Aug. 14    | 144          | Clay and gravel ..... |                           | .....do .....      | 12               |
| Chevy Chase a .....                    | Aug. 26    | 85           | Clay and rock .....   | 29                        | .....do .....      | 12               |

a Cost paid for by appropriation for public schools.

TABLE XII.—Location of deep wells.

|                                           |                                                   |
|-------------------------------------------|---------------------------------------------------|
| One-half and T streets SW.                | Tenth and South Carolina avenue SE.               |
| Second and Virginia avenue SW.            | Third and M streets SE.                           |
| Fourteenth and C streets SE.              | Sixth and B streets NW.                           |
| Second and North Carolina avenue SE.      | N, between Fourth and Fifth streets NW.           |
| Seventh and M streets NW.                 | Fairview, NE.                                     |
| Twelfth and M streets NW.                 | Twentieth and Pennsylvania avenue NW.             |
| O, between Sixth and Seventh streets, NW. | Eighth, between Richmond and Savannah streets NW. |
| Eleventh and East Capitol streets.        | First and G streets NW.                           |
| Stanton and Elvans avenues, Hilldale.     | Twelfth and K streets NW.                         |
| Third and H streets NE.                   | Lincoln avenue and Prospect street NE.            |
| Eighth and Florida avenue NW. a           | Chevy Chase.                                      |
| Seventh and H streets SW.                 |                                                   |
| Third and D streets SW.                   |                                                   |

a Not in use.

TABLE XIII.—*Mains laid and miscellaneous work during the fiscal year 1897-98.*

| New mains laid.                          | Linear feet. |
|------------------------------------------|--------------|
| 12 inches diameter.....                  | 7, 697. 70   |
| 8 inches diameter.....                   | 907          |
| 6 inches diameter.....                   | 50, 709      |
| 4 inches diameter.....                   | 6, 623. 20   |
| 3 inches diameter.....                   | 2, 630. 20   |
| 2 inches diameter.....                   | 1, 632. 70   |
| 1½ inches diameter.....                  | 500          |
| Connections to fire hydrants.....        | 1, 305. 50   |
| Intersections and connections.....       | 600. 60      |
| Mains lowered.....                       | 2, 215       |
| New stop valves.....                     | 271          |
| Stop valves repaired.....                | 99           |
| Valve casings adjusted to grade.....     | 47           |
| Fire hydrants erected.....               | 75           |
| Fire hydrants moved.....                 | 7            |
| Fire hydrants adjusted to grade.....     | 12           |
| Fire hydrants repaired.....              | 860          |
| Public hydrants erected.....             | 11           |
| Public hydrants abandoned.....           | 9            |
| Public hydrants adjusted to grade.....   | 6            |
| Public hydrants to replace old ones..... | 6            |
| Public hydrants repaired.....            | 614          |
| Fountains erected.....                   | 3            |
| Fountains to replace old ones.....       | 5            |
| Fountains adjusted to grade.....         | 5            |
| Fountains repaired.....                  | 149          |
| Wells filled.....                        | 11           |
| Wells deep driven.....                   | 10           |
| Wells cleaned.....                       | 4            |
| Pumps repaired.....                      | 774          |
| Taps made.....                           | 1, 872       |
| Water meters set (water department)..... | 83           |

WATER DEPARTMENT, DISTRICT OF COLUMBIA,  
*Washington, July 1, 1898.*

SIR: I have the honor to submit the following report on the Deacon waste-water meter, showing the waste and consumption of water in one of the sections of the city covered by the Deacon waste-water meter, and inclosing charts on a reduced scale showing the following results:

On February 23 and 24, 1898, night inspections were made between 12 p. m. and 6 a. m. of the houses on Fifth street, between Q and R streets NW., and on Warner street, between New Jersey avenue and Fifth street NW. The number of service pipes shut off was 47, supplying 216 people. The inclosed diagram (No. 2) of the Deacon meter shows consumption and waste of 1,920 gallons per hour—being a rate of 46,080 gallons per day, equal to 213 gallons per capita. The diagram (No. 2) shows that 17 of the 47 houses had leaking services. The houses were examined by the plumber of the water department on the following day, and the occupants notified to have the leaks repaired within forty-eight hours. After the allotted time for the repairs to be made had expired a second inspection was made, on March 22 and 23, 1898, between the hours of 12 p. m. and 6 a. m., of the houses on Fifth street between Q and R streets NW. The number of houses shut off was 29, supplying 150 people. The inclosed diagram (No. 3) of the Deacon meter shows consumption and waste of 240 gallons per hour, being a rate of 5,760 gallons per day, or 33 gallons per capita per day, indicating a saving of 84 per cent over the previous inspection.

In almost every case where the meter indicated waste the plumber found, on inspection on the following day, that there were leaky fixtures, showing that the waste was caused by bad plumbing or by willfully letting the water run to avoid freezing of the pipes during the cold weather.

Diagram No. 3 is taken after the occupants of the houses had had their plumbing put in order and notified to stop the waste of water. It is one of a number showing three sections of the city controlled by the Deacon meter. Each section covers three classes of houses, viz, the best class, the middle class, and the smaller houses generally occupied by negroes. In all the sections it was found by the second inspection that the waste of water was from 50 to 85 per cent of the actual quantity passing through the mains. The primary function of the Deacon meter is to give the authorities and others information which will guide them in the detection and suppression of waste.

The meter is an iron casting provided with sockets by means of which it is fixed upon the main. Within the casting a tapered tube is fitted, through which the water passes. Guided vertically within the tube by a hollow stem is a disk fitting the smaller end of the tapered tube. From the upper end of the stem fine wire passes through the gland to a small carriage, guided vertically and carrying a pencil from which a flexible wire cord passes over a pulley to a counterbalance weight whose tendency is to keep the disk constantly at the top of the tapered tube. Presented to the pencil is a sheet of metallic paper carried upon a drum, which is caused to revolve by a clock once in twenty-four hours. When water is passing through the meter, the disk is forced downward until the space around it becomes proportionate to the quantity of water passing through the meter, and the pencil is at the same time carried to a corresponding point on the diagram. The latter is ruled with horizontal lines, representing gallons per hour, and with vertical lines, representing hours, while the pencil, moving vertically, records the number of gallons passing through the meter; the drum with the diagram attached, moving horizontally, causes the quantity of water passing through the meter to be recorded at the proper time. Thus a diagram showing the number of gallons passing through the meter for every instant during the twenty-four hours is obtained.

#### METHOD OF WORKING THE METER.

The first step when introducing the waste-water meter is to decide upon a district which is supplied by a distribution main, or can be supplied by the closing of certain valves and isolating the district. The first day's diagram gives a complete and exact history of all that goes on in the district, and shows (1) the total supply of water, (2) the quantity used, and (3) the quantity wasted. The waste is readily perceived by means of the night line (the hours between 12 p. m. and 5 a. m.). It must be borne in mind that this waste is continuous throughout the twenty-four hours. The following day a second diagram is taken between midnight and 5 a. m., at a time when the use of water has practically ceased; the inspector closes the various street valves at intervals of a few minutes, commencing at the valves farthest from the meter and continues until all are closed, noting the time each valve is closed; then returning, the valves are reopened ready for the day's supply.

By means of the second diagram it may be found that the waste is confined to three or four streets out of the whole district. After ascertaining in which streets most of the waste is confined the method adopted to locate the houses which have leaky fixtures is as follows: Isolate as far as possible the street to be inspected by closing valves controlling the street, causing all the water to pass through the Deacon meter; then close off the stopcocks on the service pipes of each house to be inspected, at intervals of a few minutes, noting the time that each stopcock is closed. By reference to diagram No. 2 it will be seen where the leaks exist, and by a comparison with the notes when each house was shut off will show in which house the leak exists.

Very respectfully,

Mr. W. A. McFARLAND,  
Superintendent Water Department.

JNO. GREEN.

TABLE XIV.—Size, number, and cost of meters placed in the public schools during the fiscal year ending June 30, 1898.

| Size.                    | Number of meters. | Cost.    | Size.        | Number of meters. | Cost.    |
|--------------------------|-------------------|----------|--------------|-------------------|----------|
| Five-eighths inch .....  | 8                 | \$287.32 | 2-inch ..... | 3                 | \$216.69 |
| Three-fourths inch ..... | 47                | 1,854.47 | 3-inch ..... | 1                 | 165.28   |
| 1-inch .....             | 22                | 1,070.19 |              |                   |          |
| 1½-inch .....            | 2                 | 127.29   | Total .....  | 83                | 3,721.24 |

TABLE XV.—Connections of dead ends and service mains laid during the year 1897-98 for the betterment of the service.

| Location.                                                                                  | Number of feet. | Assessment. | Cost.    |
|--------------------------------------------------------------------------------------------|-----------------|-------------|----------|
| <i>3-inch.</i>                                                                             |                 |             |          |
| Reservation 10, between Third and Four-and-a-half streets and Pennsylvania avenue and C NW | 223.8           | -----       | \$229.55 |
| Square 624, between First and North Capitol and G and H NW                                 | 201.2           | -----       | 120.81   |
| Square 515, between Fourth and Fifth and K and L NW                                        | 334.3           | -----       | 160.17   |
| Square 442, between Sixth and Seventh streets and Rhode Island avenue and S NW             | 85.5            | -----       | 63.65    |
| Total                                                                                      | 844.8           | -----       | 574.18   |
| <i>4-inch.</i>                                                                             |                 |             |          |
| Square 81, between Twenty-first and Twenty-second and E and F NW                           | 340             | \$120.10    | 226.95   |
| Square 786, between Third and Fourth and East Capitol and A NE                             | 298             | -----       | 190.85   |
| Reservation 11, between Second and Third and B and C NW                                    | 204.8           | -----       | 136.81   |
| Square 449, between Sixth and Seventh and L and M NW                                       | 316.9           | 25.00       | 214.50   |
| Fifth, between Wilson and Pomeroy NW                                                       | 40              | -----       | -----    |
| Square 571, between First and Second and D and E NW                                        | 249.1           | 167.50      | 139.42   |
| Square south of 104, between Twentieth and Twenty-first and E and New York avenue NW       | 493             | 485.94      | 179.61   |
| Total                                                                                      | 1,941.8         | 798.54      | 1,088.14 |
| <i>6-inch.</i>                                                                             |                 |             |          |
| Sixth, between Lincoln street and Howard avenue NW                                         | 702.4           | 425.52      | 345.75   |
| Elm, between Linden and Larch NW                                                           | 345.1           | 504.20      | 186.33   |
| Reservation 10, between Third and Four-and-a-half streets and Pennsylvania avenue and C NW | 40.5            | -----       | -----    |
| Fifth, between Wilson and Pomeroy NW                                                       | 308.7           | -----       | 295.70   |
| South Capitol and C streets                                                                | 91.6            | -----       | 167.06   |
| Total                                                                                      | 1,548.3         | 929.72      | 994.84   |
| SERVICE MAINS.                                                                             |                 |             |          |
| <i>2-inch black pipe.</i>                                                                  |                 |             |          |
| Philadelphia, between Thirteenth and Fourteenth NE                                         | 717.7           | -----       | 158.38   |
| <i>2-inch galvanized iron pipe.</i>                                                        |                 |             |          |
| Fifteenth, north from Kenesaw avenue NW                                                    | 292.1           | -----       | 75.58    |
| Eighteenth east, between A south and A north                                               | 617             | -----       | 168.16   |
| Total                                                                                      | 909.1           | -----       | 243.74   |
| <i>1 1/2 inch galvanized iron pipe.</i>                                                    |                 |             |          |
| Thirteenth, north from Milwaukee NE                                                        | 450             | -----       | 107.44   |
| Milwaukee, east from Fifteenth NE                                                          | 50              | -----       | 14.35    |
| Total                                                                                      | 500             | -----       | 121.79   |

Number of gallons of water consumed in certain public school buildings at the time meters were set and again after inspections were made and waste curtailed.

| School.     | Location.                                        | Number of gallons per twenty-four hours between Dec. 20, 1897, and Jan. 5, 1898. | Number of gallons per twenty-four hours between Apr. 25, 1898, and May 2, 1898. |
|-------------|--------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Wormley     | Prospect, between Thirty-third and Thirty-fourth | 23,931                                                                           | 6,255                                                                           |
| Curtis      | O, between Thirty-second and Thirty-third        | 7,936                                                                            | 6,248                                                                           |
| Addison     | P, between Thirty-second and Thirty-third        | 21,034                                                                           | 1,113                                                                           |
| Mott        | Sixth and Trumbull                               | 13,776                                                                           | 1,440                                                                           |
| Jackson     | U, between Thirtieth and Thirty-first            | 2,340                                                                            | 663                                                                             |
| High Street | Thirty-second and Thirty-third                   | 1,593                                                                            | 1,167                                                                           |
| Threlkeld   | Thirty-sixth and Prospect                        | 5,970                                                                            | 2,619                                                                           |
| Bannacker   | Third, between K and L NW                        | 18,846                                                                           | 8,601                                                                           |
| Galee       | First and G NW                                   | 9,368                                                                            | 1,000                                                                           |
| Peabody     | Fifth and C NE                                   | 5,713                                                                            | 3,200                                                                           |



## REPORT OF THE WATER REGISTRAR.

WASHINGTON, D. C., August 1, 1898.

SIR: I have the honor to submit the following report of the operations of the revenue and inspection division of the water department for the year ending June 30, 1898:

|                                                                                             |              |
|---------------------------------------------------------------------------------------------|--------------|
| Inspections made .....                                                                      | 91,644       |
| Leaks found .....                                                                           | 5,052        |
| Leaks repaired .....                                                                        | 3,884        |
| Water bills delivered by inspectors .....                                                   | 34,095       |
| Certificates of water taxes issued .....                                                    | 5,141        |
| Meters set during year .....                                                                | 130          |
| Receipts of the water department from all sources from July 1, 1897, to June 30, 1898 ..... | \$330,952.11 |

The following tables are submitted:

Table I.—Statements of receipts of the water department from all sources from July 1, 1878, to June 30, 1898, amounting to \$4,546,873.61.

Table II.—Statement of expenditures from July 1, 1878, to June 30, 1898, amounting to \$2,710,081.67.

Table III.—Statement of assessments and collections of water main tax from June 30, 1878, to July 1, 1898. Total amount assessed, \$1,158,838.99; total amount collected, \$762,683.31.

Table IV.—Statement of advances to the Treasurer of the United States from 1880 to 1898, amounting to \$1,650,278.89.

Table V.—Number of dwellings and tenement houses supplied with Potomac water and number of miscellaneous water takers.

Table VI.—Number, kind, and size of water meters in use to June 30, 1898.

Very respectfully,

GEO. F. GREEN,  
Water Registrar.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner, District of Columbia.  
(Through superintendent of water department.)

*Financial statement from July 1, 1897, to June 30, 1898.*

|                                              |             |
|----------------------------------------------|-------------|
| Receipts:                                    |             |
| Current water tax .....                      | \$46,218.12 |
| Advertised water tax .....                   | 8,143.53    |
|                                              | <hr/>       |
| Interest on current water tax .....          | 1,833.48    |
| Interest on advertised water tax .....       | 1,957.43    |
|                                              | <hr/>       |
| Water rent .....                             | 3,790.91    |
| Water taps and stopcocks .....               | 264,784.48  |
| Water for building purposes, etc .....       | 6,910.65    |
|                                              | <hr/>       |
|                                              | 1,104.42    |
|                                              | <hr/>       |
|                                              | 330,952.11  |
|                                              | <hr/>       |
| Expenditures:                                |             |
| Salaries .....                               | 37,669.45   |
| Contingent expenses .....                    | 1,646.54    |
| Refunded water rents .....                   | 915.74      |
| Pumping expenses and pipe distribution ..... | 94,048.00   |
| High service .....                           | 76,260.92   |
| Interest and sinking fund—                   |             |
| On account of increasing water supply .....  | 153.12      |
| On account of water-stock bonds .....        | 40,168.75   |
| Amount of receipts over expenditures .....   | 80,089.59   |
|                                              | <hr/>       |
|                                              | 230,952.11  |

*Comparative statement of revenues.*

| Fiscal year.        | Water rents. | Water-main assessments. | Taps.      | Permits, etc. | Total revenues. |
|---------------------|--------------|-------------------------|------------|---------------|-----------------|
| 1886 .....          | \$124,896.22 | \$36,162.04             | \$5,096.00 | \$3,459.03    | \$169,613.29    |
| 1887 .....          | 138,539.49   | 47,183.24               | 6,012.00   | 4,846.45      | 196,581.18      |
| 1888 .....          | 171,892.49   | 34,264.85               | 4,182.00   | 4,809.42      | 215,149.26      |
| 1889 .....          | 189,407.39   | 46,280.58               | 5,190.00   | 5,576.13      | 246,454.13      |
| 1890 .....          | 197,053.34   | 45,386.55               | 5,313.72   | 6,327.95      | 254,084.56      |
| 1891 .....          | 209,664.29   | 50,332.93               | 5,640.00   | 6,869.79      | 272,497.01      |
| 1892 .....          | 220,892.93   | 68,807.35               | 5,790.00   | 6,280.81      | 301,771.09      |
| 1893 .....          | 235,911.25   | 70,026.33               | 7,307.09   | 7,931.71      | 321,176.38      |
| 1894 .....          | 245,899.69   | 86,975.44               | 4,497.00   | 1,168.79      | 338,540.92      |
| 1895 .....          | 251,872.71   | 72,972.24               | 4,537.55   | 2,100.60      | 331,483.10      |
| 1896 .....          | 255,439.11   | 27,666.57               | 4,026.00   | 1,191.09      | 288,323.77      |
| 1897 .....          | 253,500.16   | 53,653.39               | 5,157.00   | 1,128.28      | 313,438.83      |
| 1898 .....          | 264,784.48   | 58,152.56               | 6,910.65   | 1,104.42      | 330,952.11      |
| 1899 <i>a</i> ..... | 270,000.00   | 60,000.00               | 8,000.00   | 1,200.00      | 339,200.00      |
| 1900 <i>a</i> ..... | 275,000.00   | 60,000.00               | 9,000.00   | 1,200.00      | 345,000.00      |

*a* Estimated.

TABLE I.—Statement of receipts of the water department, District of Columbia, from July 1, 1878, to June 30, 1898.

| Fiscal year.                       | Balance on hand July 1, 1878. | Mains to the Government Printing Office. | Water-main tax. |             | Interest on water-main tax. |            |
|------------------------------------|-------------------------------|------------------------------------------|-----------------|-------------|-----------------------------|------------|
|                                    |                               |                                          | Adver-tised.    | Current.    | Adver-tised.                | Current.   |
| Balance on hand July 1, 1878 ..... | \$16,809.42                   |                                          |                 |             |                             |            |
| Received year ending June 30—      |                               |                                          |                 |             |                             |            |
| 1879 .....                         |                               |                                          | \$6,195.59      | \$12,463.10 | \$1,635.96                  | \$1,059.53 |
| 1880 .....                         |                               |                                          | 10,248.87       | 11,926.81   | 3,457.43                    | 1,340.18   |
| 1881 .....                         |                               |                                          | 3,200.38        | 18,368.39   | 1,228.94                    | 4,040.08   |
| 1882 .....                         |                               | \$2,800.00                               | 4,017.92        | 3,305.50    | 2,086.07                    | 392.34     |
| 1883 .....                         |                               | 1,750.00                                 | 7,320.13        | 5,467.96    | 3,769.83                    | 350.54     |
| 1884 .....                         |                               |                                          | 3,563.12        | 8,700.53    | 2,385.59                    | 122.42     |
| 1885 .....                         |                               |                                          | 3,282.57        | 14,430.22   | 2,598.81                    | 207.28     |
| 1886 .....                         |                               |                                          | 3,564.81        | 29,631.30   | 2,343.44                    | 622.49     |
| 1887 .....                         |                               |                                          | 7,630.50        | 34,874.59   | 3,183.62                    | 1,494.53   |
| 1888 .....                         |                               |                                          | 8,005.53        | 19,939.91   | 5,120.55                    | 598.86     |
| 1889 .....                         |                               |                                          | 5,524.26        | 36,464.29   | 3,192.09                    | 1,099.94   |
| 1890 .....                         |                               |                                          | 9,207.61        | 29,257.28   | 5,364.04                    | 1,557.62   |
| 1891 .....                         |                               |                                          | 2,863.02        | 45,055.34   | 1,630.54                    | 774.03     |
| 1892 .....                         |                               |                                          | 4,562.67        | 60,415.38   | 2,064.66                    | 1,764.74   |
| 1893 .....                         |                               |                                          | 4,081.83        | 63,099.31   | 1,516.15                    | 1,329.04   |
| 1894 .....                         |                               |                                          | 3,764.01        | 80,407.07   | 1,273.32                    | 1,531.04   |
| 1895 .....                         |                               |                                          | 4,294.38        | 65,014.15   | 1,379.30                    | 2,284.41   |
| 1896 .....                         |                               |                                          | 560.65          | 26,071.07   | 372.98                      | 662.87     |
| 1897 .....                         |                               |                                          | 2,429.48        | 48,512.13   | 805.30                      | 1,906.48   |
| 1898 .....                         |                               |                                          | 8,143.53        | 46,218.12   | 1,957.43                    | 1,833.48   |
| Total .....                        | 16,809.42                     | 4,550.00                                 | 103,060.86      | 659,622.45  | 47,365.95                   | 25,031.90  |

TABLE I.—Statement of receipts of the water department, District of Columbia, from July 1, 1878, to June 30, 1898—Continued.

| Fiscal year.                                | Water rents. | Taps and stopcocks. | Permits and other sources. | Total receipts. |
|---------------------------------------------|--------------|---------------------|----------------------------|-----------------|
| Balance on hand July 1, 1878.....           |              |                     |                            | \$16,809.42     |
| Received year ending June 30—               |              |                     |                            |                 |
| 1879.....                                   | \$43,574.24  | \$1,986.00          | \$2,139.25                 | 69,053.67       |
| 1880.....                                   | 165,641.42   | 1,980.00            | 2,188.10                   | 196,782.81      |
| 1881.....                                   | 109,737.83   | 1,851.00            | 1,915.72                   | 140,342.34      |
| 1882.....                                   | 101,621.10   | 1,815.00            | 1,789.71                   | 117,827.64      |
| 1883.....                                   | 65,752.24    | 2,193.00            | 2,188.72                   | 88,792.42       |
| 1884.....                                   | 119,610.20   | 2,373.00            | 2,418.79                   | 139,173.65      |
| 1885.....                                   | 118,528.20   | 3,402.00            | 3,076.09                   | 145,585.17      |
| 1886.....                                   | 124,896.22   | 5,096.00            | 3,459.03                   | 169,613.29      |
| 1887.....                                   | 138,539.49   | 6,012.00            | 4,846.45                   | 196,581.18      |
| 1888.....                                   | 171,892.49   | 4,162.00            | 4,809.92                   | 215,149.26      |
| 1889.....                                   | 189,407.39   | 5,190.00            | 5,576.16                   | 246,454.13      |
| 1890.....                                   | 197,053.34   | 5,313.72            | 6,327.95                   | 254,081.56      |
| 1891.....                                   | 209,664.29   | 5,640.00            | 6,869.79                   | 272,497.01      |
| 1892.....                                   | 220,802.93   | 5,790.00            | 6,280.81                   | 301,771.09      |
| 1893.....                                   | 235,911.25   | 7,307.09            | 7,931.71                   | 321,176.38      |
| 1894.....                                   | 245,899.69   | 4,497.00            | 1,168.79                   | 338,540.92      |
| 1895.....                                   | 251,872.71   | 4,537.55            | 2,100.60                   | 331,483.10      |
| 1896.....                                   | 255,439.11   | 4,026.00            | 1,191.09                   | 288,323.77      |
| 1897.....                                   | 253,500.16   | 5,157.00            | 1,124.28                   | 313,438.83      |
| 1898.....                                   | 264,784.48   | 6,910.65            | 1,104.42                   | 330,952.11      |
| Repayments during various fiscal years..... |              |                     |                            | 47,554.40       |
| Special assessments for service pipes.....  |              |                     |                            | 4,889.46        |
| Total.....                                  | 3,484,218.78 | 85,259.01           | 68,511.38                  | 4,546,873.61    |

TABLE II.—Expenditures.

| Fiscal year.                                      | Purchase of pump-house lot and erection of standpipe. | Extra clerical services making new water-rent and numerical books. | High service. | Material and labor, pumping expenses and pipe distribution. | Salaries, water department. | Contingent expenses. |
|---------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|---------------|-------------------------------------------------------------|-----------------------------|----------------------|
| Expended from July 1, 1878, to June 30, 1897..... | \$36,488.26                                           | \$1,225.00                                                         | \$497,064.02  | \$1,442,678.83                                              | \$395,920.87                | \$37,113.38          |
| 1898.....                                         |                                                       |                                                                    | 76,260.92     | 94,048.00                                                   | 37,669.45                   | 1,646.54             |
| Total.....                                        | 36,488.26                                             | 1,225.00                                                           | 573,324.94    | 1,536,726.83                                                | 433,590.32                  | 38,759.92            |

| Fiscal year.                                      | Water rent refund. | Water-main tax refund. | Interest on water-main tax re-funded. | Purchase of new pumping engines and boilers. | Water mains to Government Printing Office. | Total expenditures. |
|---------------------------------------------------|--------------------|------------------------|---------------------------------------|----------------------------------------------|--------------------------------------------|---------------------|
| Expended from July 1, 1878, to June 30, 1897..... | \$44,774.73        | \$2,094.19             | \$194.29                              | \$33,041.24                                  | \$8,946.21                                 | \$2,499,541.02      |
| 1898.....                                         | 915.74             |                        |                                       |                                              |                                            | 210,540.65          |
| Total.....                                        | 45,690.47          | 2,094.19               | 194.29                                | 33,041.24                                    | 8,946.21                                   | 2,710,081.67        |

## 154 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

TABLE III.—Statement of assessments and collection of water-main tax from July 1, 1878, to June 30, 1898.

| Fiscal year.                              | Amount assessed. | Duplicate payments and over-payments. | Six per cent abatement. | Amount of tax canceled subsequent to July 1, 1878. | Amount collected July 1, 1878, to June 30, 1898. | Amount outstanding July 1, 1898, subject to exemption act of Mar. 3, 1881. | Amount of collectible tax outstanding July 1, 1898. |
|-------------------------------------------|------------------|---------------------------------------|-------------------------|----------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------|
| From June 30, 1878, to June 30, 1897..... | \$1,093,605.66   | \$2,104.45                            | \$25,746.76             | \$199,053.85                                       | \$708,321.66                                     | \$4,113.78                                                                 | \$158,474.06                                        |
| 1898 .....                                | 63,178.88        | .....                                 | 1,493.95                | 1,969.47                                           | 54,361.65                                        | .....                                                                      | 5,353.81                                            |
|                                           | 1,156,784.54     | 2,104.45                              | 27,240.71               | 201,023.32                                         | 762,683.31                                       | 4,113.78                                                                   | 163,827.87                                          |

α Of this amount \$94,124.78 was outstanding and collectible July 1, 1878.

## RECAPITULATION.

|                                                                   |                |
|-------------------------------------------------------------------|----------------|
| Total amount of assessments plus duplicate payments .....         | \$1,158,888.99 |
| Amount of abatement at 6 per cent .....                           | 27,240.71      |
| Amount of tax canceled and struck off books since July 1, 1878:   |                |
| By orders of Commissioners, decisions of supreme court, etc ..... | 201,023.32     |
| By amount subject to exemption, act March 3, 1881 .....           | 4,113.78       |
| Amount of tax collected from July 1, 1878, to June 30, 1898 ..... | 762,683.31     |
| Amount outstanding July 1, 1898—collectible tax .....             | 163,827.87     |
|                                                                   | 1,158,888.99   |

TABLE IV.—Advances to Treasurer United States, ex officio commissioner of sinking fund, District of Columbia.

| Fiscal year. | Interest and sinking fund water-stock bonds. | Interest and sinking fund 48-inch and Fourteenth street mains. | Interest and sinking fund increasing water supply. | Total interest and sinking fund. |
|--------------|----------------------------------------------|----------------------------------------------------------------|----------------------------------------------------|----------------------------------|
| 1880.....    | \$74,025.00                                  | .....                                                          | .....                                              | \$74,025.00                      |
| 1881.....    | 74,123.77                                    | .....                                                          | .....                                              | 74,123.77                        |
| 1882.....    | 43,796.08                                    | .....                                                          | .....                                              | 43,796.08                        |
| 1883.....    | 44,610.00                                    | .....                                                          | .....                                              | 44,610.00                        |
| 1884.....    | 44,575.00                                    | .....                                                          | .....                                              | 44,575.00                        |
| 1885.....    | 44,610.00                                    | .....                                                          | .....                                              | 44,610.00                        |
| 1886.....    | 31,485.00                                    | .....                                                          | \$13,686.23                                        | 58,296.23                        |
| 1887.....    | 57,735.00                                    | .....                                                          | 55,047.27                                          | 86,532.27                        |
| 1888.....    | 31,485.00                                    | .....                                                          | .....                                              | 57,735.00                        |
| 1889.....    | 44,610.00                                    | .....                                                          | 57,239.02                                          | 88,724.02                        |
| 1890.....    | 44,610.00                                    | .....                                                          | 76,655.69                                          | 121,265.69                       |
| 1891.....    | 44,610.00                                    | .....                                                          | 81,283.26                                          | 125,893.26                       |
| 1892.....    | 44,610.00                                    | .....                                                          | 71,164.21                                          | 115,774.21                       |
| 1893.....    | 44,610.00                                    | .....                                                          | 69,991.13                                          | 114,601.13                       |
| 1894.....    | 44,610.00                                    | \$20,713.89                                                    | 68,817.14                                          | 134,141.03                       |
| 1895.....    | 44,610.00                                    | 20,358.80                                                      | 67,537.17                                          | 132,505.97                       |
| 1896.....    | 44,610.00                                    | 20,003.70                                                      | 62,052.27                                          | 126,665.97                       |
| 1897.....    | 40,927.06                                    | 19,648.60                                                      | 40,408.98                                          | 104,667.58                       |
| 1898.....    | 40,168.75                                    | 7,457.00                                                       | 13,640.75                                          | 62,024.81                        |
|              |                                              |                                                                | 153.12                                             | 40,321.87                        |
| Total .....  | 884,420.66                                   | 88,181.99                                                      | 677,676.24                                         | 1,650,278.89                     |

TABLE V.—*Premises in the District of Columbia supplied with Potomac water.*

| Dwellings and tenements.        | North-west. | North-east. | South-west. | South-east. | Total. |
|---------------------------------|-------------|-------------|-------------|-------------|--------|
| To June 30, 1897 .....          | 25,395      | 6,948       | 5,118       | 5,275       | 42,736 |
| Year ending June 30, 1898 ..... | 946         | 300         | 154         | 357         | 1,757  |
| Total .....                     | 26,341      | 7,248       | 5,272       | 5,632       | 44,493 |

MISCELLANEOUS WATER TAKERS.

|                            |       |     |     |     |       |
|----------------------------|-------|-----|-----|-----|-------|
| Asylums .....              | 3     | 2   |     | 1   | 6     |
| Armories .....             | 7     |     |     |     | 7     |
| Baseball grounds .....     | 2     |     |     |     | 2     |
| Barber shops .....         | 109   | 8   | 7   | 6   | 130   |
| Bakeries .....             | 60    | 8   | 18  | 9   | 85    |
| Banks .....                | 16    |     |     | 2   | 18    |
| Barrooms .....             | 268   | 34  | 66  | 68  | 406   |
| Boarding houses .....      | 112   | 34  | 1   | 6   | 153   |
| Breweries .....            | 3     | 1   | 1   | 1   | 6     |
| Bottling depots .....      | 8     | 3   | 6   | 1   | 18    |
| Bookbinderies .....        | 4     |     |     |     | 4     |
| Baths .....                | 4     |     |     |     | 4     |
| Brick yards .....          |       | 2   |     | 4   | 6     |
| Colleges .....             | 13    | 1   |     |     | 14    |
| Churches .....             | 82    | 9   | 18  | 17  | 126   |
| Cemeteries .....           | 3     | 1   |     | 1   | 5     |
| Clubrooms .....            | 10    |     |     | 1   | 11    |
| Convents .....             | 12    | 2   |     |     | 14    |
| Car stables .....          | 3     | 5   | 3   | 4   | 24    |
| Croquet grounds .....      | 3     |     |     |     | 3     |
| Dining rooms .....         | 22    |     |     |     | 22    |
| Dye houses .....           | 20    | 4   | 2   | 2   | 28    |
| Engine houses .....        | 10    | 2   | 1   | 3   | 16    |
| Florists .....             | 3     |     |     |     | 3     |
| Foundries .....            | 10    | 3   |     |     | 13    |
| Factories .....            | 2     |     |     | 2   | 4     |
| Gas engines .....          | 3     | 2   | 1   |     | 6     |
| Greenhouses .....          | 7     | 2   | 1   | 3   | 13    |
| Halls .....                | 41    |     | 3   | 7   | 51    |
| Hospitals .....            | 10    | 2   | 1   | 1   | 14    |
| Hotels .....               | 40    |     |     |     | 40    |
| Laundries .....            | 40    | 2   | 4   | 4   | 50    |
| Manufactories .....        | 17    | 2   |     | 2   | 21    |
| Market houses .....        | 5     | 1   |     | 1   | 7     |
| Mills .....                | 11    |     |     | 1   | 14    |
| Museums .....              |       |     | 3   |     | 3     |
| Motors .....               | 2     |     |     |     | 2     |
| Orphan asylums .....       | 5     |     |     |     | 5     |
| Offices .....              | 796   | 2   | 1   | 7   | 806   |
| Printing offices .....     | 16    | 1   |     |     | 17    |
| Police stations .....      | 5     | 2   | 1   | 1   | 9     |
| Photograph galleries ..... | 26    |     |     |     | 26    |
| Restaurants .....          | 232   | 3   | 5   | 19  | 259   |
| Railway stations .....     | 4     | 1   |     |     | 5     |
| Riding schools .....       | 2     |     |     |     | 2     |
| Livery stables .....       | 59    | 4   | 1   | 6   | 70    |
| Stables, private .....     | 846   | 82  | 21  | 35  | 984   |
| Shops .....                | 147   | 8   | 9   | 9   | 173   |
| Steam boilers .....        | 57    | 4   | 2   | 2   | 65    |
| Steam engines .....        | 83    | 7   | 14  | 5   | 109   |
| Slaughter houses .....     |       |     |     |     | 2     |
| Stores .....               | 1,428 | 41  | 76  | 114 | 1,659 |
| Schools, public .....      | 52    | 21  | 4   | 9   | 86    |
| Schools, private .....     | 27    | 2   | 2   | 1   | 32    |
| Stone yards .....          | 12    | 4   | 1   |     | 17    |
| Steamboat wharves .....    |       |     | 10  |     | 10    |
| Theaters .....             | 6     |     |     |     | 6     |
| Truck Company A .....      |       | 1   |     |     | 1     |
| Truck Company B .....      |       | 1   |     |     | 1     |
| Truck Company C .....      | 1     |     |     |     | 1     |
| Truck Company D .....      | 1     |     |     |     | 1     |
| Warehouses .....           | 48    | 6   | 13  | 6   | 73    |
| Wood and coal yards .....  | 24    | 4   | 3   | 9   | 40    |
| Total .....                | 4,841 | 326 | 301 | 338 | 5,796 |

TABLE V.—*Premises in the District of Columbia supplied with Potomac water*—Continued.

## SUMMARY, BY LOCATION, OF WATER TAKERS.

| Location.              | Houses supplied with Potomac water. |           | Miscellaneous water takers. |           |
|------------------------|-------------------------------------|-----------|-----------------------------|-----------|
|                        | Number.                             | Per cent. | Number.                     | Per cent. |
| Northwest section..... | 26,341                              | 59.20     | 4,883                       | 83.44     |
| Northeast section..... | 7,248                               | 16.29     | 326                         | 5.57      |
| Southwest section..... | 5,272                               | 11.85     | 302                         | 5.16      |
| Southeast section..... | 5,632                               | 12.66     | 341                         | 5.83      |
| Total.....             | 44,493                              | .....     | 5,852                       | .....     |

TABLE VI.—*Meters.*

|                         | Worth-<br>ington. | Thom-<br>son. | Crown. | Nash. | Union. | Niag-<br>ara. | Lam-<br>bert. | Regis-<br>ter. | Total. |
|-------------------------|-------------------|---------------|--------|-------|--------|---------------|---------------|----------------|--------|
| One-half inch.....      |                   | 2             | 1      | 4     |        |               |               |                | 7      |
| Five-eighths inch.....  |                   | 2             |        | 2     | 1      |               |               |                | 5      |
| Three-fourths inch..... | 5                 | 95            | 4      | 105   | 35     | 1             | 14            |                | 259    |
| 1 inch.....             | 14                | 84            | 23     | 139   | 38     | 1             | 1             |                | 300    |
| 1½ inch.....            | 14                | 49            | 27     | 74    | 5      | 1             | 1             |                | 171    |
| 2 inch.....             | 21                | 24            | 14     | 39    | 9      |               | 1             |                | 108    |
| 3 inch.....             | 13                | 5             | 7      | 9     | 3      |               |               |                | 37     |
| 4 inch.....             | 2                 | 3             | 1      | 4     |        |               | 1             |                | 11     |
| 6 inch.....             |                   | 1             | 3      | 2     |        |               |               |                | 6      |
| Registers.....          |                   |               |        |       |        |               |               | 3              | 3      |
| Total.....              | 69                | 265           | 80     | 378   | 91     | 3             | 18            | 3              | 907    |

## REPORT OF THE INSPECTOR OF ELECTRIC LIGHTING, IN CHARGE OF THE STREET-LIGHTING DEPARTMENT.

WASHINGTON, August 1, 1898.

SIR: I have the honor to submit the following report of the operations of the street-lighting department for the fiscal year ending June 30, 1898:

The increase of \$10,000 in the appropriation for street lighting enabled the department to establish many needed lamps in sections heretofore without light. A great many of the inhabited alleys have been lighted as far as the funds would permit, yet a number of important alleys, used exclusively for stables, have been omitted. These will be attended to to a great extent during the coming fiscal year.

The lighting of the Aqueduct Bridge was improved during June by adding 24 incandescent lamps to the 12 then in service, the lamps being arranged in clusters of 3 each. The greatly increased travel on the bridge, due to the location of Camp Alger near Falls Church, Va., demanded that better lighting facilities be provided.

The gas, naphtha, and incandescent lighting service has been well maintained to the entire satisfaction of the department.

The addition of 14 illuminated sign lamps of the Collis pattern at several of the important corners where are lamps are used has been a decided improvement.

The following tables show the amount of work done during the year, the number of lamps lighted on June 30, 1898, as compared with the number on June 30, 1897, and the locations of the new lamps erected.

## LIST OF ADDITIONAL GAS LAMPS ERECTED DURING THE FISCAL YEAR 1898.

*Northwest.*—Two on G street, between Seventeenth and Eighteenth streets; 1 on G street, between Eighteenth and Nineteenth streets; 1 on Twentieth street, between F and G streets; 1 on Twentieth street, between G and H streets; 1 on Twenty-first street, between F and G streets; 1 on Twenty-first street, between G and H streets; 1 on Twenty-first street, between H and I streets; 1 on N street, between Seventeenth street and Scott circle; 2 on O street, between Fourth and Fifth streets; 1 on O street, between Fifth and Sixth streets; 1 on L street, between New Jersey avenue and Third street; 1 on L street, between Third and Fourth streets; 1 on Columbia street, between O and P streets; 1 on Columbia street, between P and Q streets; 1 at corner Twentieth and I streets; 1 at corner Twenty-fifth and N streets; 1 on Twenty-third street, between L and M streets; 1 on Twenty-second street, between M and N streets; 2 in front of No. 7 engine house, R between Ninth and Tenth streets; 1 on west

side Sixteenth street, between U and V streets; 1 on east side Sixteenth street intersection of New Hampshire avenue; 1 on east side Sixteenth street, between U and V streets; 1 on west side Sixteenth street, between V street and Florida avenue; 1 on east side Sixteenth street, between V street and Florida avenue; 1 on northeast corner Sixteenth street and Florida avenue; 1 on south side Westminster street, between Ninth and Tenth streets; 1 at corner Ninth and Westminster streets; 1 at corner Ninth and French streets; 1 on S street opposite Phelps place; 1 in alley between Twenty-first and Twenty-second streets, E and F streets; 1 on north side Florida avenue, between Fourteenth and Fifteenth streets; 2 in alley between Nineteenth and Twentieth, M and N streets; 2 in alley between Second and Third, B and C streets; 1 in alley between Ninth and Tenth, T and U streets; 1 in alley between Ninth and Tenth, Rhode Island avenue and R street; 1 in alley between Ninth and Tenth, M and N streets; 3 in alley between Sixth and Seventh, S and T streets; 5 in alley between Sixth and Seventh, M and N streets; 4 in alley between Sixth and Seventh, L and M streets; 3 in alley between Fourth and Fifth, N and O streets; 2 in alley between Second and Third, G street and Massachusetts avenue; 1 in alley between Sixth and Seventh, N and O streets; 1 in alley between K and L streets, Fourteenth street and Vermont avenue; 1 in front of No. 1334 V street; 1 on Fifteenth street extended north of Florida avenue; 1 on Q street between Twenty-second and Twenty-third streets; 1 on west side Twenty-third street, between G and H streets; 1 at northeast corner First and Bates streets; 2 on south side Bates street, between First and North Capitol streets; 2 on Florida avenue, between First and North Capitol streets; 4 on U street, between Seventeenth and Eighteenth streets; 2 on Thirty-sixth street, between Prospect and M streets; 1 on Thirty-fifth street, between P and Q streets; 2 on Jefferson street, between K street and Chesapeake and Ohio canal; 1 on east side Thirty-fourth street, between M street and Chesapeake and Ohio canal; 1 on north side R street, between Thirty-fourth and Thirty-fifth streets; 1 in alley, Cambridge place and Q and Thirtieth streets.

*Northeast.*—Two in front of engine house, North Capitol and Quincy streets; 3 on Florence street, between F street and Maryland avenue; 3 on Elliott street, between F street and Maryland avenue; 3 on Fourteenth street, between F and G streets; 6 on F street, between Twelfth and Fifteenth streets; 3 on Eleventh street, between Maryland avenue and D street; 1 on Ninth street, between Massachusetts avenue and B street; 1 at southwest corner Sixth and L streets; 1 on Tenth street, between Massachusetts avenue and B street; 1 on Fourth street, between K and L streets; 1 on Tenth street, between B and C streets; 1 on west side Ninth street, between K and L streets; 1 at northeast corner Fourteenth and E streets; 1 at northeast corner Tennessee avenue and E street; 1 on south side Q street, between North Capitol and First streets; 2 on Pickford place, between F and G and Eighth and Ninth streets.

*Southwest.*—One on Sixth-and-a-half street, between D and E streets; 1 on Third street, between H and I streets; 1 at corner Robinson and M streets; 1 on Delaware avenue, between G and H streets; 1 on southeast corner Delaware avenue and H street; 1 on Sixth-and-a-half and E streets; 1 at west side South Capitol street, between Virginia avenue and E street; 2 in alley between Four-and-a-half and Sixth and H and I streets; 1 in alley between Four-and-a-half and Sixth and L and M streets; 1 in alley between Third and Four-and-a-half and F and G streets; 1 in alley between Third and Four-and-a-half and E and F streets; 2 in alley between First street and Delaware avenue, D and E streets.

*Southeast.*—One on south side South Carolina avenue, between Thirteenth and Fourteenth streets; 1 on Fourth street, between G street and Virginia avenue; 1 on Fourth street, between South Carolina avenue and G street; 1 on Fourth street, between D and E streets; 1 on D street, between Ninth and Tenth streets; 1 on D street, between Tenth and Eleventh streets; 1 on D street, between Eleventh and Twelfth streets; 1 at southwest corner Seventh and D streets; 1 on D street, between Sixth and Seventh streets; 1 at corner Twelfth and D streets; 2 on C street, between New Jersey avenue and South Capitol street; 1 at southeast corner C street and South Carolina avenue; 1 at corner Fourth and C streets; 1 at corner Sixteenth and C streets; 1 on C street, between Fifteenth and Sixteenth streets; 2 in alley between Sixth and Seventh and A and B streets; 1 in alley between Sixth and Seventh and E and G streets; 1 on east side Eleventh street, between Pennsylvania avenue and G street; 2 on Heckman street, between First and Second and E and F streets; 1 on Massachusetts avenue, between Kentucky avenue and Thirteenth street.

*Columbia Heights.*—Two on Kenesaw street, between Thirteenth and Fourteenth streets; 1 at northwest corner Whitney and Holmead avenues; 1 in front of 1421 Binney street; 2 on Welling place, between Fourteenth street and University place; 1 on Lamar place, between Eslin and Morgan streets; 1 on Binney street, between Fourteenth and Sixteenth streets; 2 on Kenesaw avenue, between Fourteenth and Fifteenth streets; 2 on Harvard street, between Thirteenth street and Sherman avenue; 1 on Roanoke street, between Thirteenth street and Sherman avenue; 1 at southeast corner Kenesaw avenue and Sixteenth street; 1 on Kenesaw avenue, between Fifteenth and Sixteenth streets.

*Mount Pleasant.*—One on Seventeenth street extended north of Howard avenue; 1 at north side of Meridian street between Brown and Center streets.

*Washington Heights.*—One at west side of Eighteenth street, between California and Wyoming avenues; 1 at southwest corner of Eighteenth street and California avenue; 2 on California avenue, between Eighteenth and Nineteenth streets; 1 at corner Nineteenth street and California avenue; 1 on Nineteenth street, between California and Vermont avenues; 1 on Nineteenth street, between Vermont and Florida avenues.

*Takoma Park.*—One at corner of Blair road and Chestnut avenue; 1 on Wabash avenue and Piney Branch road; 1 on Piney Branch road opposite church; 1 on Chestnut avenue, between Blair road and railroad; 2 on Blair road, between Chestnut avenue and Carroll avenue.

*Anacostia.*—One at corner of High street and Maple avenue; 1 on High street, between Maple avenue and Valley street; 1 at corner of High and Valley streets.

*County.*—Twenty-two on Rock Creek Church road, between Brightwood avenue and Soldier's Home; 6 on Fourteenth street extended, between Brightwood avenue and "A" road; 2 in front of Brightwood engine house; 1 on Brightwood avenue between Genesee street and Shepherd road; 1 at southwest corner of First and Randolph streets; 1 at west side of First street, between Randolph and S streets; 1 at southwest corner of First and Seaton streets; 1 on west side of First street, between Seaton and T streets; 1 at northwest corner of First street and Rhode Island avenue; 1 on First street, between Rhode Island avenue and U street; 1 at southwest corner of First and U streets; 1 on west side of First street, between U and V streets; 1 at southwest corner of First and V streets; 1 on west side of First street, between V and W streets; 1 at southwest corner of First and W streets; 2 on Oak street, between Harewood avenue and Linden street; 1 on Brightwood avenue and Marshall street; 1 on south side of Quincey street, between Lincoln avenue and First street.

#### LOCATION OF COLLIS LAMPS ERECTED DURING THE FISCAL YEAR 1898.

*Northwest.*—One at southwest corner of Ninth street and New York avenue; 1 at northwest corner of Seventh street and Pennsylvania avenue; 1 at northeast corner of Fifteenth and P streets; 1 at southeast corner of Fourteenth street and New York avenue; 1 at northeast corner of Vermont avenue and H street; 1 at northwest corner of Sixth and B streets; 1 at northwest corner of Fourteenth and F streets; 1 at southwest corner of Sixth street and Pennsylvania avenue; 1 at southwest corner of Seventh street and Pennsylvania avenue; 1 at northwest corner of Fifteenth and I streets; 1 at northeast corner of Fifteenth and G streets; 1 at northeast corner of Sixth street and Pennsylvania avenue; 1 at northeast corner of Fifteenth street and Pennsylvania avenue; 1 at northwest corner of Ninth and F streets.

#### ADDITIONAL NAPHTHA LAMPS ERECTED DURING THE FISCAL YEAR 1898.

*Northwest.*—One at east side Twentieth street, between New York avenue and E street; 1 at northwest corner Twentieth street and New York avenue; 3 on New York avenue, between Nineteenth and Twentieth streets; 1 at southeast corner Twentieth street and New York avenue; 2 in alley between Twenty-fifth and Twenty-sixth streets and Pennsylvania avenue and M street; 3 in alley between Twelfth and Thirteenth and R and S streets; 1 in alley between Twelfth and Thirteenth and R and S streets; 2 in alley between Nineteenth and Twentieth and R and S streets; 2 in alley between Thirty-first and Thirty-second and M and N streets; 1 on South street, between Thirty-first and Thirty-second and Canal and K streets; 2 in alley between Thirty-third and Thirty-fourth and M and Canal streets; 1 on Thirty-fourth street, between Q and R streets; 1 on Thirty-fourth street, between R and S streets; 1 on Thirty-fourth street, between S and T streets; 1 on Thirty-fourth street, between T and U streets; 4 on Thirty-fourth street, between U and Thirty-second streets; 1 on S street, between Thirty-third and Thirty-fourth streets; 1 on S street, between Thirty-fourth and Thirty-fifth streets; 3 in alley between Twenty-sixth and Twenty-seventh and K and L streets; 3 in alley between Twenty-sixth and Twenty-seventh and I and K streets; 1 in alley between Twenty-third and Twenty-fourth and L and M streets; 1 in alley between Twenty-third and Twenty-fourth and G and H streets; 1 in alley between Twenty-third and Twenty-fourth and E and F streets; 3 in alley between Twenty-second and Twenty-third and L and M streets; 2 in alley between Twenty-second and Twenty-third streets and Pennsylvania avenue and I street; 3 in alley between Twenty-second street and New Hampshire avenue and M and N streets; 2 in alley between Twentieth and Twenty-first and K and L streets; 1 in alley between Twenty-first and Twenty-second and G and H streets; 1 in alley between Nineteenth and Twentieth and K and L streets; 1 in alley between Eighteenth and Nineteenth and K and L streets; 2 in alley between Seventeenth and Eighteenth and D and E streets; 1 on north side New York avenue, between Twentieth and Twenty-first streets; 2 in alley between Second and Third and F and G



streets; 2 in alley between Second and Third and H and I streets; 1 in alley between First street and New Jersey avenue and Pierce and M streets; 2 in alley between Sixth and Seventh and P and Q streets; 1 in alley between Twelfth and Thirteenth and N and O streets; 2 in alley between Twelfth and Thirteenth and S and T streets; 2 in alley between Twelfth and Thirteenth and T and U streets; 1 in alley between Fourteenth and Fifteenth and T and U streets; 1 in alley between Vermont avenue and Tenth and U and V streets; 2 in alley between Florida avenue and Tenth and V and W streets; 2 in alley between Chesapeake and Ohio Canal and Thirty-first and Thirty-second streets; 1 in alley between First and Third and N and O streets.

*Northeast.*—One at southwest corner Florida avenue and O street; 1 at southwest corner Florida avenue and Second street; 1 on south side Florida avenue, between Second street and Delaware avenue; 1 at southwest corner Florida and Delaware avenues; 1 at southeast corner Florida avenue and Third street; 1 on south side Florida avenue, between Third and Fourth streets; 1 at southwest corner Florida avenue and N street; 1 at southwest corner Florida avenue and Fourth street; 1 on south side Florida avenue, between Fourth and Fifth streets; 1 at southwest corner Florida avenue and Fifth street; 1 on south side Florida avenue, between Fifth and Sixth streets; 1 at southeast corner Florida avenue and Sixth street; 1 on south side Florida avenue, between Sixth and Seventh streets; 1 on south side Florida avenue, between Seventh and Eighth streets; 1 at southwest corner Florida avenue and Eighth street; 1 on south side Florida avenue, between Eighth and Ninth streets; 1 at southwest corner Florida avenue and Ninth street; 2 in alley between First and Second and B and C streets; 2 in alley between Second and Third and L and M streets; 1 in alley between Second and Third and K and L streets; 1 in alley between Thirteenth and Fourteenth and G and H streets; 4 in alley between North Capitol and First and H and I streets; 3 in alley between Delaware avenue and First street and B and C streets; 1 in alley between Second and Third and F and G streets; 2 in alley between Sixth and Seventh and H and I streets; 1 in alley between Sixth and Seventh and G and H streets; 2 in alley between Eighth and Ninth and G and H streets.

*Southwest.*—One in alley between Four-and-a-half and Sixth and C and D streets; 2 on K street bridge over James Creek Canal; 2 in alley between First street and Delaware avenue and B and C streets; 1 on C street, between First street and Delaware avenue; 2 at corners Delaware avenue and C street; 3 on Delaware avenue, between B and C streets; 2 on Delaware avenue, between C and Canal streets; 2 on C street, between Delaware avenue and South Capitol street; 1 at corner South Capitol and C streets; 1 on west side Delaware avenue, between H and I streets; 1 on east side Delaware avenue, between H and I streets; 1 at northwest corner Delaware avenue and I street; 1 at southeast corner Delaware avenue and I street; 1 on west side Delaware avenue, between I and K streets; 1 on east side Delaware avenue, between I and K streets; 2 on east side Delaware avenue, between K and L streets; 2 on west side Delaware avenue, between L and M streets; 1 on east side Delaware avenue, between L and M streets; 1 on Third street, between L and M streets; 2 in alley between Thirteen-and-a-half and Fourteenth and C and D streets; 2 in alley between Twelfth and Thirteenth and C and D streets; 1 in alley between Ninth and Tenth and F and G streets; 1 in alley between Sixth and Seventh and I and K streets; 1 in alley between Four-and-a-half and Sixth and F and G streets; 1 in alley between Four-and-a-half and Sixth and G and H streets; 1 in alley between Four-and-a-half and Sixth and I and K streets; 4 in alley between Four-and-a-half and Sixth and M and N streets; 2 in alley between Third and Four-and-a-half and L and M streets; 1 in alley between Third and Delaware avenue and L and M streets; 1 in alley between Third and Four-and-a-half and G and H streets; 2 in alley between Delaware avenue, Canal, and E streets; 4 on Third street, between M and N streets; 1 on Second street, between K and L streets; 2 on I street, between First and Half streets; 1 on Second street, between I and K streets; 1 on H street, between Ninth and Tenth streets; 1 on west side Ninth street, between G and H streets; 1 on northwest corner Ninth and H streets; 1 on southeast corner Ninth and H streets; 1 on Ninth street, between H and I streets; 1 on southeast corner Ninth and I streets; 1 on east side Eighth street, between H and I streets; 1 on northwest corner Eighth and I streets; 1 on southeast corner Eighth and I streets; 1 on west side Eighth street, between I and K streets; 1 on northeast corner Eighth and K streets; 1 on north side H street, between Half and First streets; 1 on west side Half street, between G and H streets; 1 on east side Half street, between H and I streets.

*Southeast.*—One at corner Fifteenth and East Capitol streets; 1 on Fifteenth street, between East Capitol and A streets; 1 on Fifteenth street, between A and B streets; 1 on Fifteenth street, corner B street; 1 on B street, between Fifteenth and Sixteenth streets; 1 on B street, corner Sixteenth street; 1 on B street, between Sixteenth and Seventeenth streets; 1 on Fifteenth street and South Carolina avenue; 2 on Fifteenth street, between South Carolina avenue and C street; 1 on C street, between Sixteenth and Seventeenth streets; 1 at corner Seventeenth and C streets; 1 at cor-

ner Massachusetts avenue and B street; 1 at corner Fourteenth and B streets; 2 on B street, between Thirteenth and Fourteenth streets; 1 on Thirteenth street, between A and B streets; 1 on Thirteenth street, between B and C streets; 1 on Thirteenth street, between C and D streets; 2 on D street, between Twelfth and Thirteenth streets; 2 on Second street, between L and M streets; 3 on First street, between M and N streets; 2 on First street, between N and O streets; 1 at corner First and O streets; 2 on O street, between Half and First streets; 1 on G street, between Thirteenth and Fourteenth streets; 1 on L street, between Second and Third streets; 1 at corner Half and O streets; 2 on Half street, between N and O streets; 1 at corner Fifteenth and A streets; 2 in alley between First and Second and C and D streets; 1 at northeast corner Fourteenth street and South Carolina avenue; 1 on north side South Carolina avenue, between Fourteenth and Fifteenth streets; 1 on Walter street, between Twelfth and Thirteenth and B and C streets; 2 in alley between Eleventh and Twelfth and B and C streets; 1 in alley between Sixth and Seventh and Pennsylvania avenue and C street; 1 in alley between Third and Fourth and A and B streets; 1 in alley between First street and New Jersey avenue and M and N streets; 2 in alley between Sixth and Seventh and G and I streets; 2 in alley between Twelfth and Thirteenth and K and L streets; 2 in alley between Thirteenth street and Kentucky avenue and C and D streets; 1 in alley between Eighth and Ninth and G and E streets; 2 in alley between First and Second and N and O streets; 1 in alley between G and I and Sixth and Seventh streets.

#### County.

*Trinidad.*—Seven on Twelfth street extended, north of Q street.

*Ivy City.*—One at corner Capitol avenue and Olivette street; 1 at corner Capitol avenue and Kendall street; 1 at corner Capitol and Central avenues; 1 at corner Capitol avenue and Providence street; 1 at corner Fenwick street, at railroad crossing; 1 at corner Fenwick street, between Capitol avenue and Gallaudet street; 1 on Providence street, between Capitol avenue and Gallaudet street; 1 on Central avenue, between Capitol avenue and Gallaudet street; 1 on Kendall street, between Capitol avenue and Gallaudet street; 1 on Corcoran street, between Olivette and Gallaudet streets; 1 at corner Capitol avenue and Fenwick street; 1 at corner Olivette and Corcoran streets.

*Anacostia.*—One at intersection of High and Pierce streets; 2 on Pierce street, between Valley and Jefferson streets; 5 on Howard avenue, between Nichols avenue and river; 6 on Sumner avenue, between Nichols avenue and river; 2 on Polk street, between Jefferson and Arthur streets; 2 on Franklin street, east of Nichols avenue; 4 on Morris road, between Nichols avenue and Baltimore street.

*Brightwood Park.*—One at corner Eighth and Flint streets; 1 at corner Seventh and Flint streets; 1 on Flint street, between Fifth and Seventh streets; 1 at corner Flint and Fifth streets; 1 at corner Eighth and Erie streets; 1 at corner Seventh and Erie streets; 1 on Erie street, between Fifth and Seventh streets; 1 at corner Fifth and Erie streets; 1 on Eighth and Des Moines streets; 1 at corner Seventh and Des Moines streets; 1 on Des Moines street, between Fifth and Seventh streets.

*Winthrop Heights.*—One at corner Montello avenue and Charles street; 1 at corner Lawrence avenue and Charles street; 1 at corner Lafayette avenue and Charles street; 1 on Lawrence avenue, between Charles street and Queens Chapel road; 1 on Montello avenue, between Charles street and Queens Chapel road.

*Columbia Heights.*—Two on north side Roanoke street, between Thirteenth street and Sherman avenue; 2 on north side Harvard street, between Thirteenth street and Sherman avenue; 1 at southeast corner Binney and Fifteenth streets.

*Mount Pleasant.*—One on Lowell street, between Seventeenth and Eighteenth streets; 1 at corner Eighteenth and Lowell streets; 1 at corner Eighteenth and Milwaukee streets; 1 at corner Eighteenth street and Howard avenue.

*Rosedale and Isherwood.*—One on Gales street, between Sixteenth and Seventeenth streets; 2 on Kramer street, between Sixteenth and Seventeenth streets; 1 on Rosedale street, between Sixteenth and Seventeenth streets; 1 on Sixteenth street, between Rosedale and E streets; 1 at corner Seventeenth and Kramer streets; 1 at corner Seventeenth and Gales streets; 2 on Seventeenth street, between Gales street and Benning road; 1 on Nineteenth street, between Gales street and Benning road; 1 at corner Nineteenth and Gales streets; 1 at corner Twentieth and Gales streets; 1 at corner Twentieth and Seaton streets.

One at northeast corner North Capitol and Randolph streets; 1 at southeast corner North Capitol and Seaton streets; 1 at southwest corner North Capitol and T streets; 1 on north side Irving street, between Sherman avenue and Seventh street; 2 on north side Sheridan street, east of Brightwood road; 2 on south side Sheridan street, east of Brightwood road.

One on northeast corner King and Trinidad streets; 1 on northwest corner Turner and Trinidad streets; 1 on northwest corner Levis and Trinidad streets; 1 on east side Trinidad street, between Levis and King streets; 2 on Keating avenue north of Lincoln avenue.

ADDITIONAL INCANDESCENT LAMPS ESTABLISHED DURING THE YEAR 1898.

Eight on Newark street, from Tennallytown road to Thirty-fourth street; 2 on Newark street, east of Thirty-fourth street; 14 on Canal road, from Aqueduct Bridge to Conduit road; 5 on Fourth street, between T and V streets, Eckington; 1 on T street, between Second and Third streets, Eckington; 24 on Aqueduct Bridge.

NAPHTHA LAMPS CHANGED TO GAS DURING FISCAL YEAR 1898.

*Northwest.*—One on north side S street, between First and North Capitol streets; 1 on northeast corner First and S streets; 1 on northwest corner North Capitol and S streets; 1 on north side Q street, between Thirty-fourth and Thirty-fifth streets; 1 on east side of Thirty-sixth street, between O and P streets; 5 on Florida avenue, between First and North Capitol streets; 1 on R street, between First and North Capitol streets.

*Northeast.*—One on northeast corner First and O streets; 2 on Florida avenue, between North Capitol and First streets; 1 on Patterson street, between North Capitol and First streets; 3 on L street, between North Capitol and First streets; 2 on Eleventh street, between F and G streets; 2 on Eleventh street, between G and H streets; 2 on I street, between Thirteenth street and Florida avenue; 1 at corner Florida avenue and I street; 2 on Florida avenue, between Thirteenth and Fourteenth streets; 1 on Tenth street, between D and E streets; 2 at corner Tenth and D streets; 1 on D street, between Tenth and Eleventh streets; 2 at corner Eleventh and K streets; 1 on Eleventh street, between I and K streets; 1 on Eleventh street, between K street and Florida avenue; 17 on M street, from North Capitol to Fourth street; 3 on Eleventh street, between Maryland avenue and D street.

*Southwest.*—Two on Third street, between E and F streets; 3 on E street, between South Capitol and First streets; 6 on Virginia avenue, between First and Third streets; 7 in alley, between Third and Four-and-a-half and B and C streets.

*Southeast.*—Four on E street, between New Jersey avenue and South Capitol street; 4 on New Jersey avenue, between M and N streets; 3 on Georgia avenue, between Third and Fourth streets; 4 on Virginia avenue, between Seventh and Eighth streets; 1 on east side Twelfth street, between South Carolina avenue and D street; 1 on north side C street, between Twelfth and Thirteenth streets; 1 at corner Thirteenth and C streets; 1 on C street, between Thirteenth street and Kentucky avenue; 1 at corner Kentucky avenue and C street; 1 at corner Fourteenth and C streets; 1 on C street, between Fourteenth and Fifteenth streets; 1 at corner Fifteenth and C streets; 1 on I street, between Second and Third streets; 12 on South Capitol street, from I to M street.

*County.*—One at corner Seventh street and Bunker-hill road; 1 on Bunker-hill road, between Seventh street and railroad; 4 at railroad crossing on Bunker-hill road; 1 on Bunker-hill road, between railroad and Tenth street; 2 at corner Bunker-hill road and Tenth street; 2 at corner Bunker-hill road and Eleventh street; 2 at corner Milwaukee and Tenth streets; 1 on Tenth street, between Lowell and Milwaukee streets; 1 at corner Tenth and Lowell streets; 2 at corner Milwaukee and Eleventh streets; 1 on Milwaukee street, between Eleventh and Twelfth streets; 2 at corner Milwaukee and Twelfth streets; 2 on Milwaukee street, between Twelfth and Thirteenth streets; 1 at corner Thirteenth and Milwaukee streets; 1 on Twelfth street, between Lowell and Milwaukee streets; 2 at corner Twelfth and Lowell streets; 1 on Lowell street, between Twelfth and Thirteenth streets; 1 at corner Thirteenth and Lowell streets; 2 at corner Twelfth and Keokuk streets; 4 on Bunker-hill road, from Fourth to Seventh street.

Table showing the distribution of the new lamps established during the fiscal year 1898.

| Kind of light. | Northwest. |         | Northeast. |         | Southwest. |         | Southeast. |         | County.  |        | Total. |
|----------------|------------|---------|------------|---------|------------|---------|------------|---------|----------|--------|--------|
|                | Streets.   | Alleys. | Streets.   | Alleys. | Streets.   | Alleys. | Streets.   | Alleys. | Streets. | Roads. |        |
| Gas            | 53         | 28      | 31         | .....   | 7          | 7       | 20         | 3       | 47       | 42     | 228    |
| Naphtha        | 17         | 56      | 17         | 19      | 47         | 22      | 40         | 17      | 93       | .....  | 328    |
| Incandescent   | .....      | .....   | .....      | .....   | .....      | .....   | .....      | .....   | 40       | 14     | 54     |
| Collis         | 14         | .....   | .....      | .....   | .....      | .....   | .....      | .....   | .....    | .....  | 14     |
| Arc            | 84         | .....   | .....      | .....   | .....      | .....   | 6          | .....   | .....    | .....  | 90     |
| Total          | 168        | 84      | 48         | 19      | 54         | 29      | 66         | 20      | 180      | 46     | 714    |

# 162 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Number of lamps of all kinds in use on July 1, 1893, as compared with July 1, 1897.

|                    | 1897. | 1893. |
|--------------------|-------|-------|
| Gas .....          | 6,053 | 6,310 |
| Collis .....       | 1     | 15    |
| Naphtha .....      | 1,077 | 1,257 |
| Incandescent ..... | 214   | 268   |
| Arc .....          | 508   | 508   |
| Total .....        | 7,853 | 8,448 |

Increase during the year, 595 lamps.

The changes have been as follows:

|                    | Added. | Discontinued. |
|--------------------|--------|---------------|
| Gas .....          | 382    | 125           |
| Collis .....       | 14     | .....         |
| Naphtha .....      | 337    | 157           |
| Incandescent ..... | 54     | .....         |
| Arc .....          | 90     | .....         |
| Total .....        | 877    | 282           |

Increase during the year, 595 lamps.

|                                           | Gas. | Naphtha. |
|-------------------------------------------|------|----------|
| Number of posts moved and reset (a) ..... | 112  | 52       |
| Number of posts moved and reset .....     | 64   | 9        |
| Number of broken posts reerected .....    | 18   | 4        |
| Number of unused posts taken down .....   | 76   | 2        |
| Number of new posts erected .....         | 202  | 332      |

a Chargeable to other appropriations.

## ELECTRIC LIGHTING.

Ninety additional electric arc lamps were established during the year, distributed between the two companies as follows:

### ADDITIONAL ARC LAMPS LIGHTED DURING FISCAL YEAR 1893, AND MAINTAINED BY THE UNITED STATES ELECTRIC LIGHTING COMPANY.

*Northwest.*—One on Fourteenth street, between Pennsylvania avenue and F street; 1 on Fourteenth street, between F and G streets; 1 on southeast corner Fifteenth and E streets; 2 on south side G street, between Thirteenth and Fourteenth streets; 1 on north side G street, between Thirteenth and Fourteenth streets; 1 on southwest corner Thirteenth and G streets; 1 on west side Thirteenth street, between G and H streets; 1 on north side G street, between Twelfth and Thirteenth streets; 1 on south side G street, between Twelfth and Thirteenth streets; 1 on east side Twelfth street, between Pennsylvania avenue and E street; 1 on Twelfth street, between E and F streets; 1 on west side Twelfth street, between F and G streets; 1 on northeast corner Twelfth and G streets; 1 on southwest corner Eleventh and G streets; 1 on G street, between Ninth and Eleventh streets; 1 on southwest corner Tenth and G streets; 1 on north side G street, between Ninth and Tenth streets; 1 on south side G street, between Ninth and Tenth streets; 1 on north side G street, between Eighth and Ninth streets; 1 on northwest corner Eighth and G streets; 1 on north side G street, between Seventh and Eighth streets; 2 on H street, between Thirteenth and Fourteenth streets; 1 on east side Tenth street, between E and F streets; 1 on north side E street, between Eleventh and Twelfth streets; 1 on north side E street, between Twelfth and Thirteenth streets; 1 on south side E street, between Twelfth and Thirteenth streets; 1 on east side Fifteenth street, between Twelfth and Thirteenth streets; 1 on east side Fifteenth street, between Pennsylvania avenue and F street, between Tenth and Eleventh streets; 1 on G streets; 1 on south side E street, between Tenth and Eleventh streets; 1 on northwest corner Seventeenth and K streets; 1 on east side Seventeenth street, between I and K streets; 1 on southwest corner Seventeenth and I streets; 1 on east side Seventeenth street, between H and I streets; 1 on northwest corner Eighteenth and H streets; 1 on north side H street,

between Connecticut avenue and Seventeenth street; 1 on southeast corner Jackson place and H street; 1 on north side H street, between Connecticut avenue and Sixteenth street; 1 on south side H street, opposite Sixteenth street; 1 on north side H street, between Vermont avenue and Sixteenth street; 1 on southeast corner Thirteenth-and-a-half street and Pennsylvania avenue; 1 on south side Pennsylvania avenue, between Thirteenth and Thirteenth-and-a-half streets; 1 on north side Pennsylvania avenue, between Eleventh and Twelfth streets; 1 on south side Pennsylvania avenue, between Tenth and Eleventh streets; 1 on northeast corner Tenth and D streets; 1 on south side Pennsylvania avenue, between Eighth and Ninth streets; 1 on south side Pennsylvania avenue, between Seventh and Eighth streets; 1 on southeast corner Eighth street and Market space; 1 on south side Pennsylvania avenue, between Four-and-a-half and Sixth streets; 1 on south side Pennsylvania avenue, between Third and Four-and-a-half streets; 1 on corner Fourteenth and B streets; 1 on corner Fourteenth street and Ohio avenue; 1 on corner Fourteenth and D streets; 1 on corner Fourteenth and E streets.

*Southwest.*—One on corner Pennsylvania avenue and Third street; 1 on Pennsylvania avenue, between Third street and North Carolina avenue; 1 on corner Pennsylvania avenue and Fifth street; 1 on Pennsylvania avenue, between Seventh and Eighth streets; 1 on Pennsylvania avenue, between Sixth and Seventh streets; 1 on corner Pennsylvania avenue and Tenth street.

ADDITIONAL ARC LAMPS LIGHTED DURING FISCAL YEAR 1898, AND MAINTAINED BY THE POTOMAC ELECTRIC POWER COMPANY.

*Northwest.*—One on Four-and-a-half street, between C and D streets; 1 on corner Four-and-a-half and C streets; 2 on Four-and-a-half street, between Pennsylvania avenue and C street; 1 on Four-and-a-half street, between Pennsylvania avenue and Missouri avenue; 1 on corner Fifth street and Massachusetts avenue; 1 on north side Pennsylvania avenue, between Madison and Fifteenth streets; 1 at intersection of New Hampshire avenue and M street; 1 on M street, between New Hampshire avenue and Twenty-second street; 1 on corner Twenty-second and M streets; 1 on M street, between Twenty-second and Twenty-third streets; 1 on corner Twenty-third and M streets; 1 on M street, between Twenty-third and Twenty-fourth streets; 1 on corner Twenty-fourth and M streets; 2 on M street, between Twenty-fourth and Twenty-fifth streets; 1 on corner Twenty-fifth and M streets; 1 on M street, between Twenty-fifth and Twenty-sixth streets; 1 on corner Connecticut avenue and I street.

A great improvement in the lighting of Pennsylvania avenue from Eleventh street east to Rock Creek has been made by the addition of sixteen lamps and the readjustment and relocation of the old ones. All the old poles were also taken down and new ones of a very ornamental character substituted, with the lamps suspended on a 9-foot arm over the roadway. From Second to Eleventh street SE. the posts were removed from the south curb and placed in the parking in the center of the avenue, with the lamps suspended over both roadways. This work was done at the expense of the United States Electric Lighting Company, at the suggestion of the department, and greatly improves the appearance of the avenue.

Two hundred and fifty of the old square street sign frames used on the abandoned gas posts along the line of the electric arc lamps were replaced with ornamental scroll frames. Although somewhat more expensive than the old style, they are very ornamental and present a neat appearance on the posts. About one hundred more of the corners will be equipped with these frames this coming year.

Where arc lamps existed along the conduit lines of both companies, a material reduction in price resulted, the figures being so low, however, that they can not be used as a basis for estimates. They are below the actual cost of furnishing the service and will be temporary only. Where but one set of conduits existed the full price allowed by law was paid.

The location of the lamps on which such a cut was made is as follows:

Twenty-four in Georgetown at \$25 per lamp per annum; 3 on New York avenue, between Thirteenth and Fourteenth streets, at \$25 per lamp per annum; 3 on Pennsylvania avenue, between Madison and Jackson places, at \$25 per lamp per annum; 2 on one post, corner of Thirteenth and H streets, at \$20 per lamp per annum.

These thirty-two lamps were maintained by the Potomac Electric Power Company during the year 1897; during the year 1898 they were maintained by the United States Electric Lighting Company.

It is urgently recommended that the arc lamps be lighted earlier in the evening by at least half an hour, for on cloudy nights it is quite dark at forty-five minutes after sunset (the time now required by law for lighting the lamps). It would be better still to return to the sunset-sunrise schedule, which is almost universally used in other cities. The arc lamps are placed on streets where there are rapid transit lines and where plenty of light is required.

## 164 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

The following is a statement of the expenditures for the department for the year:

*Financial statement for the fiscal year 1898.*

## STREET LIGHTING.

## RECEIPTS.

|                                                                                                   |              |
|---------------------------------------------------------------------------------------------------|--------------|
| Appropriation .....                                                                               | \$160,000.00 |
| Received from Baltimore and Potomac Railroad for maintenance of<br>lamps along their tracks ..... | 3,000.00     |
| Received from Baltimore and Ohio Railroad for maintenance of lamps<br>along their tracks .....    | 439.93       |
| Total .....                                                                                       | 163,439.93   |

## EXPENDITURES.

|                                           |              |              |
|-------------------------------------------|--------------|--------------|
| Gas lighting:                             |              |              |
| Washington Gaslight Company .....         | \$115,824.79 |              |
| Deductions for defective service .....    | 136.23       |              |
|                                           |              | \$115,688.56 |
| Georgetown Gaslight Company .....         | 9,043.65     |              |
| Deductions for defective service .....    | 34.44        |              |
|                                           |              | 9,009.21     |
| Naphtha lighting:                         |              |              |
| Pennsylvania Globe Gaslight Company ..... | 23,972.79    |              |
| Deductions for defective service .....    | 62.05        |              |
|                                           |              | 23,910.74    |
| Incandescent lighting:                    |              |              |
| Potomac Electric Power Company .....      | 4,885.59     |              |
| Deductions for defective service .....    | 135.51       |              |
|                                           |              | 4,750.08     |
| Erecting new lamps:                       |              |              |
| Washington Gaslight Company .....         | 1,170.00     |              |
| Georgetown Gaslight Company .....         | 45.00        |              |
| Pennsylvania Globe Gaslight Company ..... | 664.00       |              |
|                                           |              | 1,879.00     |
| Moving and resetting lamps:               |              |              |
| Washington Gaslight Company .....         | 228.00       |              |
| Georgetown Gaslight Company .....         | 40.00        |              |
| Pennsylvania Globe Gaslight Company ..... | 18.00        |              |
|                                           |              | 286.00       |
| Reerecting broken posts:                  |              |              |
| Washington Gaslight Company .....         | 40.00        |              |
| Georgetown Gaslight Company .....         | 10.00        |              |
| Pennsylvania Globe Gaslight Company ..... | 4.00         |              |
|                                           |              | 54.00        |
| Taking down old posts:                    |              |              |
| Washington Gaslight Company .....         | 97.50        |              |
| Georgetown Gaslight Company .....         | 16.50        |              |
| Pennsylvania Globe Gaslight Company ..... | 4.00         |              |
|                                           |              | 118.00       |
| Changing lamps from naphtha to gas:       |              |              |
| Washington Gaslight Company .....         | 846.00       |              |
| Georgetown Gaslight Company .....         | 12.00        |              |
|                                           |              | 858.00       |
| Services:                                 |              |              |
| Skilled laborer .....                     | 492.50       |              |
| Painter .....                             | 49.90        |              |
| Laborer erecting enamel signs .....       | 26.25        |              |
|                                           |              | 568.65       |
| Lamp posts .....                          |              | 1,887.22     |
| Special lanterns .....                    |              | 18.00        |
| Collis sign lamps .....                   |              | 356.10       |
| Ornamental scroll sign frames .....       |              | 2,029.20     |
| Square copper sign frames .....           |              | 130.00       |
| Glass street signs .....                  |              | 225.30       |
| Enamel street signs .....                 |              | 65.52        |
| Repairs to cuts in pavements .....        |              | 691.50       |
| Carting lanterns, frames, etc. ....       |              | 480.60       |
| Carting lamp posts .....                  |              | 253.03       |
| Miscellaneous .....                       |              | 13.32        |
| Total .....                               |              | 163,272.03   |

ELECTRIC LIGHTING.

RECEIPTS.

|                                                                                                  |             |
|--------------------------------------------------------------------------------------------------|-------------|
| Appropriation .....                                                                              | \$55,000.00 |
| Received from Baltimore and Potomac Railroad for maintenance of lamps<br>along their tracks..... | 456.25      |
| Total .....                                                                                      | 55,456.25   |

EXPENDITURES.

|                                               |                   |
|-----------------------------------------------|-------------------|
| Arc lighting:                                 |                   |
| United States Electric Lighting Company ..... | \$39,680.00       |
| Deductions for defective service.....         | 204.40            |
|                                               | <hr/> \$39,475.60 |
| Potomac Electric Power Company.....           | 12,020.75         |
| Deductions for defective service.....         | 45.07             |
|                                               | <hr/> 11,975.68   |
| Repair and purchase of bicycles.....          | 151.02            |
| Purchase of testing instruments.....          | 772.35            |
| Salaries of inspectors .....                  | 2,694.25          |
| Office furniture .....                        | 211.50            |
| Miscellaneous.....                            | 22.65             |
|                                               | <hr/>             |
| Total .....                                   | 55,303.05         |

Very respectfully submitted.

WALTER C. ALLEN,  
*Inspector of Electric Lighting, in Charge of the Street Lighting Department.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.*

REPORT OF THE INSPECTOR OF ELECTRIC LIGHTING.

WASHINGTON, D. C., August 15, 1898.

SIR: I have the honor to submit the following report of the various branches of electrical work under the control of this office:

CONDUITS.

The record of conduits in the last annual report was brought up to September 1, 1897. Since then the amount laid has been as follows:

Under permit dated September 30, the Chesapeake and Potomac Telephone Company replaced their old solid asphalt conduit from Ninth and E streets along E street to Eighth and up Eighth street to the Post-Office Department building, by laying 406 feet of 4-way terra-cotta conduit and 29 feet of 4-inch iron pipe, with 2 manholes. Also, under date of November 18, they replaced the last of the old solid-system conduit by laying 209 feet of 2-way terra-cotta conduit, 169 feet of 4-inch terra-cotta pipe, and one manhole, from the northeast corner of Vermont avenue and K street along Vermont avenue into the alley in square 217.

The destruction of the cable power house of the Capital Traction Company by fire in September, 1897, resulted in the change of motive power on the line from cable to an underground electric system similar to that employed by the Metropolitan Railroad Company. The following amount of conduit was laid to carry their feeder cables:

BUNCEMAN Table showing the length of conduit laid by the Capital Traction Company.

|                              | Section of road.     |                    |                 | Total feet of conduit. | Total feet of duct. |
|------------------------------|----------------------|--------------------|-----------------|------------------------|---------------------|
|                              | Pennsylvania avenue. | Fourteenth street. | Seventh street. |                        |                     |
| Cement-lined iron pipe:      |                      |                    |                 |                        |                     |
| 28-way .....                 | 280                  |                    |                 | 280                    | 7,280               |
| 22-way .....                 | 9,109                |                    |                 | 9,109                  | 200,398             |
| 14-way .....                 | 4,257                |                    |                 | 4,257                  | 59,598              |
| 8-way .....                  | 194                  |                    |                 | 194                    | 1,552               |
| 7-way .....                  |                      |                    | 29              | 29                     | 203                 |
| 6-way .....                  |                      |                    | 179             | 179                    | 1,074               |
| 4-way .....                  | 30                   |                    | 35              | 65                     | 260                 |
| Camp single terra cotta:     |                      |                    |                 |                        |                     |
| 8-way .....                  | 2,567                |                    |                 | 2,567                  | 20,536              |
| 6-way .....                  |                      | 7,141              |                 | 7,141                  | 42,846              |
| 4-way .....                  | 6,212                | 2,443              |                 | 8,655                  | 34,620              |
| 2-way .....                  |                      |                    | 7,650           | 7,650                  | 15,300              |
| Terra cotta 2-way duct ..... |                      |                    | 8,092           | 8,092                  | 16,184              |
| Total .....                  | 22,649               | 9,584              | 15,985          | 48,218                 | 399,851             |

| Section of road.            | Cement lined. | Terra cotta. | Multiple terra cotta. | Total of conduits. | Sewer connections, 6-inch pipe. | Man-holes. |
|-----------------------------|---------------|--------------|-----------------------|--------------------|---------------------------------|------------|
| Pennsylvania avenue .....   | 13,870        | 8,779        |                       | 22,649             | 1,475                           | 96         |
| Fourteenth street .....     |               | 9,584        |                       | 9,584              | 728                             | 53         |
| Seventh street .....        | 243           | 7,650        | 8,092                 | 15,985             | 906                             | 52         |
| Total feet of conduit ..... | 14,113        | 26,013       | 8,092                 | 48,218             | 3,109                           | 181        |

One hundred and twenty-six feet over the M Street Bridge not included in totals.

Under the terms of the appropriation act for the fiscal year 1897 the United States Electric Lighting Company extended their underground lines in Columbia and Washington heights by building lateral conduits in numerous streets, as shown by the following table:

Length of conduit laid in Washington and Columbia heights by the United States Electric Lighting Company during 1898.

| Location.                   | Date laid.             | Ducts. | Potomac multiple terra cotta. | Camp single terra cotta. | Manholes. |         | Hand-holes. |
|-----------------------------|------------------------|--------|-------------------------------|--------------------------|-----------|---------|-------------|
|                             |                        |        |                               |                          | Large.    | Medium. |             |
| Bancroft place .....        | Mar. 7 to 11 .....     | 4      |                               | 616                      | 2         | 4       |             |
| California avenue .....     | Apr. 25 to 30 .....    | 4      |                               | 862                      | 2         |         | 1           |
| Le Roy place .....          | Apr. 27 to May 2 ..... | 4      |                               | 688                      | 1         | 2       | 3           |
| Columbia road .....         | May 3 to 10 .....      | 4      |                               | 1,402                    | 4         | 2       | 1           |
| Roanoke street .....        | May 5 to 11 .....      | 4      |                               | 654                      | 2         |         | 2           |
| Yale street .....           | May 9 to 11 .....      | 4      |                               |                          | 2         |         | 1           |
| Princeton street .....      | May 10 to 12 .....     | 4      | 688                           |                          | 2         |         | 1           |
| Harvard street .....        | May 12 to 14 .....     | 4      | 717                           |                          | 2         |         | 2           |
| Bacon street .....          | May 13 to 16 .....     | 4      | 744                           |                          | 2         |         | 2           |
| Binney street .....         | May 14 to 18 .....     | 4      | 671                           |                          | 2         |         | 2           |
| Chapin street .....         | May 16 to 19 .....     | 4      | 737                           |                          | 1         | 2       |             |
| Total feet of conduit ..... |                        |        | 4,226                         | 4,222                    | 22        | 10      | 16          |
| Total feet of duct .....    |                        |        | 16,904                        | 16,888                   |           |         |             |





CORNER NINTH AND D STREETS NW. MAY, 1898.



ALLEY BETWEEN FOURTEENTH, FIFTEENTH, F, AND G STREETS NW. APRIL, 1898.

As a further extension of their conduit system to Columbia Heights under the authority of the same appropriation act, the company claimed the right to build conduits up Ninth street from Mount Vernon square to Florida avenue, to Thirteenth street, to and into Columbia Heights. This extension was opposed by the Potomac Electric Power Company, and briefs were filed with the Commissioners by both sides in support of their claims. The matter was referred to the attorney for the District for an opinion, who stated that the Commissioners could issue the permit under the law. This was accordingly done, and work was begun. While this was in progress the company applied for other extensions of their system on other streets, but the issuance of permits was prevented by an injunction obtained by the Potomac Electric Power Company, which also included any further work on the Ninth street line. After a thorough trial in the court, a decision was rendered favorable to the Potomac Company and the injunction made permanent. At the time the work was stopped 5,102 feet of 4-way single terra-cotta pipe had been laid, 12 large and 13 medium manholes built, and 5 medium and 1 large manholes not completed, leaving the conduit practically completed as far north as U street. With the consent of both parties and under authority of the court, the uncovered trench was refilled and paved over, so as not to obstruct travel on the street. On July 1, 1898, the conduit had not been legalized by act of Congress nor the decision of the court reversed. It was, therefore, not in use on that date.

During the autumn of 1897 the street department widened the roadway of Tenth street from D to F street by moving the curb lines back  $6\frac{1}{2}$  feet on each side. In the west sidewalk the United States Electric Lighting Company had a 6-way conduit, over which the new curb would be laid. It was therefore necessary to rebuild the conduit and manholes on a new line, which was done at the expense of the District. An overhead pole line also existed there between D and E streets, which was removed and the various services laid under ground. The conduit was enlarged from 6 to 8 ducts, the District paying the following amount for the work, the cost of the extra ducts being borne by the company:

|                                                       |                   |
|-------------------------------------------------------|-------------------|
| Labor, laying 962 feet of conduit, at 55 cents .....  | \$529. 10         |
| 962 feet of 6-way terra-cotta pipe, at 24 cents ..... | 230. 88           |
| 5 large manholes, at \$55 .....                       | 275. 00           |
| 2 medium manholes, at \$35 .....                      | 70. 00            |
| 6 small manholes, at \$10 .....                       | 60. 00            |
| <b>Total .....</b>                                    | <b>1, 164. 98</b> |

A 1-way conduit of the United States Electric Lighting Company, running northward on Brightwood avenue from Florida avenue to a point 133 feet distant, was repaired and replaced by 4 ducts.

Under permit dated October 6, 1897, the same company repaired their old 6-way conduit, on the west side of Thirteen-and-a-half street, by laying 24 additional ducts around the old construction. This new construction amounts to 1,060 feet of conduit, containing 25,410 feet of terra-cotta duct. Also, under permit dated November 30, 1897, they rebuilt their 12 way conduit on the north side of C street from Thirteen-and-a-half to Ninth streets by abandoning the old construction and laying 36 ducts in the south sidewalk. The new conduit is 1,925 feet long, containing 69,320 feet of terra-cotta duct. The overhead lines on both Thirteen-and-a-half street and C street are to be removed and the wires placed in the conduits. The work of removal is now under way and will be completed during the month of August, 1898.

In order to connect their old power house with the new, this company has laid 106 feet of 64-way conduit, containing 6,784 feet of duct, in the north side of B street, between Thirteen-and-a-half and Fourteenth streets. Connecting their storage-battery room with their new plant, they have laid 30 feet of 12-way and 65 feet of 24-way conduit, containing 1,920 feet of duct. To connect their existing conduit in the north sidewalk of B street with their new plant, they have laid 38 feet of 24-way conduit, containing 912 feet of duct.

The Postal Telegraph-Cable Company was granted a permit to rebuild their conduit (consisting of a single 4-inch iron pipe) on Fourteenth street, from F street to New York avenue. They laid 838 feet of 4-way terra-cotta conduit, containing 3,352 feet of duct. At the point where this conduit crosses that of the Potomac Electric Power Company, at the northeast corner of Fourteenth street and New York avenue, a manhole was built embracing the latter conduit. At the time of the partial destruction of the plant of the United States Electric Lighting Company by fire on the night of November 25, 1897, the Postal Telegraph-Cable Company was deprived of power to run their motor-generators for telegraphic work. To overcome this difficulty cables for carrying current from the Potomac Electric Power Company's lines were drawn into this conduit from the joint manhole mentioned above to the office of the telegraph company, at Pennsylvania avenue and Fourteenth street. This use of telegraph conduits for electric light and power purposes was immediately made the subject of Congressional investigation, as shown by the following Senate document (No. 122, Fifty-fifth Congress, second session):

*"Letter from the Commissioners of the District of Columbia in response to resolution of the Senate of January 27, 1898, as to the use of telegraph conduits for electric lighting cable purposes in the District of Columbia.*

"February 7, 1898.—Referred to the Committee on the District of Columbia and ordered to be printed.

"OFFICE COMMISSIONERS OF THE DISTRICT OF COLUMBIA,  
"Washington, February 7, 1898.

"SIR: In response to Senate resolution of January 27, 1898, 'that the Commissioners of the District of Columbia be, and they are hereby, directed to report to the Senate forthwith whether telegraph conduits are being used for electric light cable purposes in the District of Columbia, and whether lighting wires are being run from such conduits without provision of law,' the Commissioners have the honor to say that the following is the only instance known to them of a connection between an electric-light conduit and a telegraph conduit in the city:

"At the northeast corner of New York avenue and Fourteenth street the conduit of the Potomac Electric Power Company crosses the conduit of the Postal Telegraph-Cable Company. A manhole has been constructed where the two conduits intersect, exposing the side wall of the conduit of the Potomac Electric Power Company. This wall has been broken through where so exposed, and two cables of the Potomac Electric Power Company have been run into the conduit of the Postal Telegraph-Cable Company and drawn through said conduit to the office of the latter-named company on Pennsylvania avenue, between Thirteenth and Fourteenth streets. This connection was made entirely within the manhole of the telegraph conduit, and without disturbing the street pavement. A permit was not obtained from the Commissioners to make the connection. No connection has been made from the electric-light cable in the telegraph conduit to any adjacent premises. With regard to the use of said cables in the building of the Postal Telegraph-Cable Company, the Commissioners have the honor to submit herewith report of the manager of that company.

"The Engineer Commissioner had no knowledge of any proposed action to be taken by said company which involved the drawing in of cables not belonging to the company.

"Very respectfully,

"JOHN W. ROSS,  
"JOHN B. WIGHT,  
"W. M. BLACK,

"Commissioners of the District of Columbia.

"HON. GARRET A. HOBART,  
"President of the Senate."

"POSTAL TELEGRAPH-CABLE COMPANY,  
"Washington, D. C., February 5, 1898.

"GENTLEMEN: In reply to your letter of the 1st instant, submitting copy of Senate resolution of January 27, 1898, to wit:

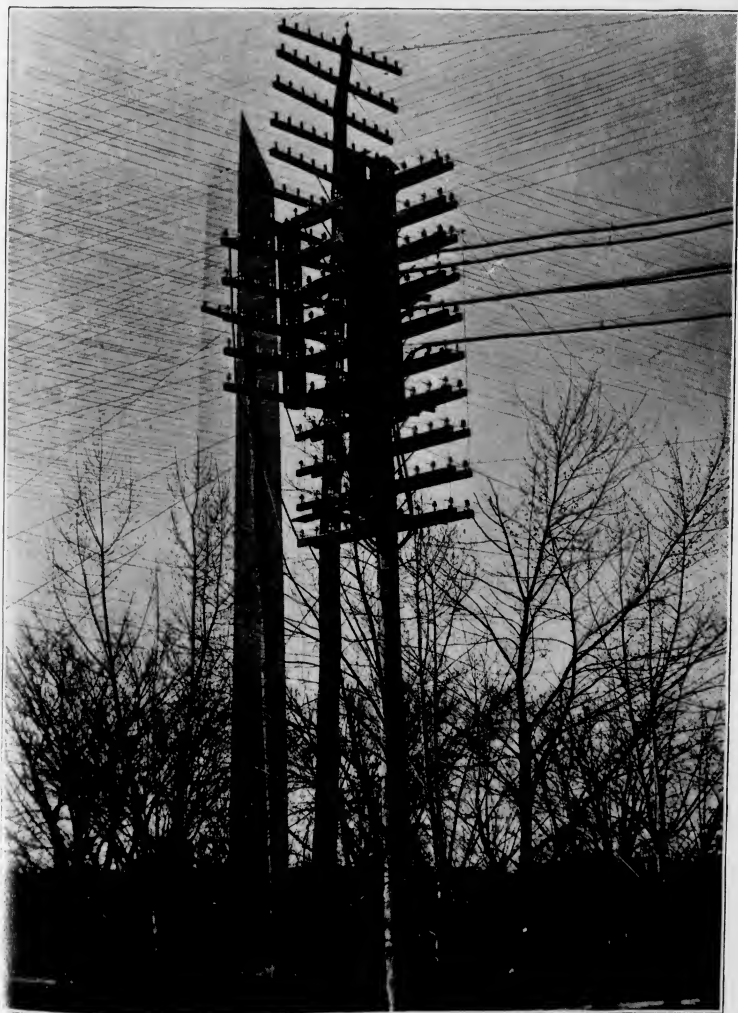
"*Resolved*, That the Commissioners of the District of Columbia be, and they are hereby, directed to report to the Senate forthwith whether telegraph conduits are being used for electric-light cable purposes in the District of Columbia, and whether lighting wires are being run from such conduits without provision of law"—

"I have to say that no present use is made by us of the lighting wires referred to. They were run, after conference between Commissioner Black, Mr. Crosby, of the Potomac Electric Power Company, and myself, in order that an emergency or breakdown service might be at our command. The operation of our lines depends upon motor dynamos, which are run by current supplied by the United States Electric Lighting Company.

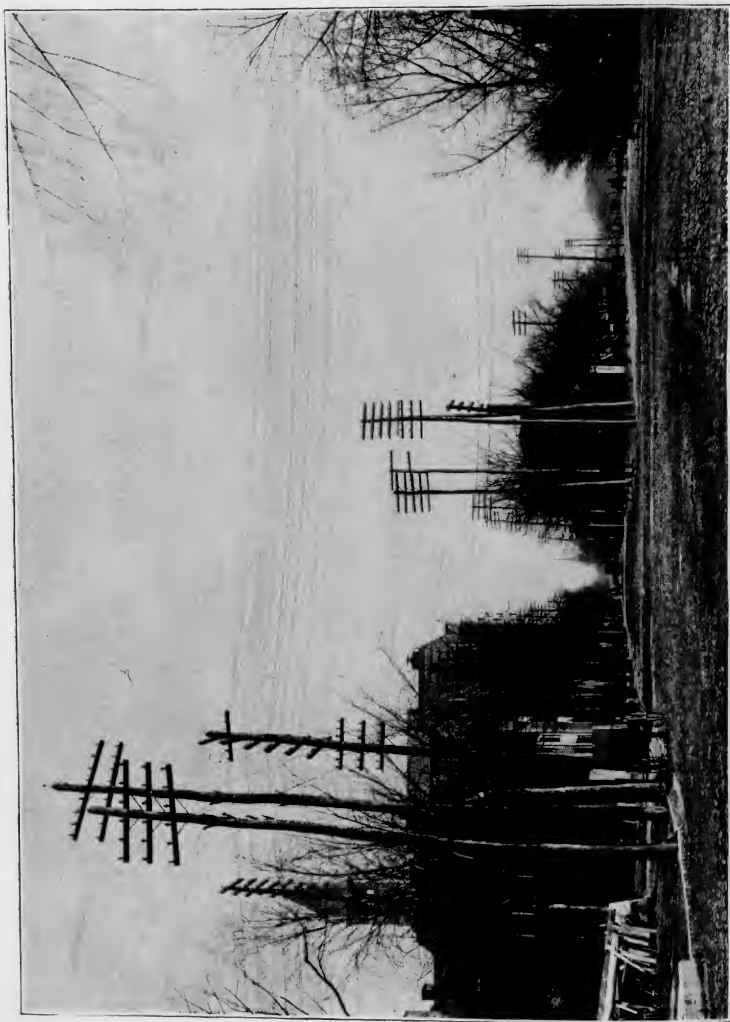
"On the occasion of the recent fire in the station of that company our service was for a time paralyzed, and was suspended and irregular for several days thereafter. It was impossible to know how long a time would elapse before reliable service from the United States Electric Lighting Company could be restored; hence the conference with Commissioner Black and the subsequent drawing in of cable as soon as could be done.

"By the time this was accomplished the service of the United States Electric Lighting Company had been reestablished, and no current has been taken from the Potomac Electric Power Company. It would be possible, however, in case of another such emergency, to connect their wires with our motors.

"In the conference with Commissioner Black he stated that the case was one concerning which the law seemed to be silent, but as no special opening of the street was involved he had nothing to say bearing directly on the subject. A permit for repair of our conduit where it crosses that of the Potomac Electric Power Company



NORTHWEST CORNER OF FOURTEENTH AND B STREETS NW.



OHIO AVENUE, THIRTEEN-AND-A-HALF AND C STREETS NW. MARCH, 1898.

had already been granted, this having been applied for before the fire. Hence no especial opening of the street was required.

"Very respectfully,

"POSTAL TELEGRAPH-CABLE COMPANY,  
"W. H. ALLEN, Manager.

"The COMMISSIONERS OF THE DISTRICT OF COLUMBIA."

These cables, as stated verbally to me by the Potomac Electric Power Company, are now in use for private electric lighting.

The following table shows the length of conduit in use in the District of Columbia on July 1, 1898:

*Summary of conduits, July 31, 1898.*

| Number of ducts. | United States Electric Lighting Co. |               | Potomac Electric Power Co. |               | Postal Telegraph Cable Co. |               |
|------------------|-------------------------------------|---------------|----------------------------|---------------|----------------------------|---------------|
|                  | Feet of conduit.                    | Feet of duct. | Feet of conduit.           | Feet of duct. | Feet of conduit.           | Feet of duct. |
| 1.....           | 10,569                              | 10,569        |                            |               |                            |               |
| 2.....           | 123,052                             | 246,104       | 245                        | 490           | 13,236                     | 13,236        |
| 3.....           | 98                                  | 294           |                            |               |                            |               |
| 4.....           | 50,145                              | 200,580       |                            |               | 1,427                      | 5,708         |
| 6.....           | 37,974                              | 227,844       | 9,373                      | 56,238        |                            |               |
| 7.....           |                                     |               |                            |               |                            |               |
| 8.....           | 3,041                               | 24,828        |                            |               |                            |               |
| 9.....           |                                     |               | 7,288                      | 65,592        |                            |               |
| 10.....          | 88                                  | 880           |                            |               |                            |               |
| 12.....          | 945                                 | 11,340        | 37,900                     | 454,800       |                            |               |
| 13.....          |                                     |               |                            |               |                            |               |
| 14.....          |                                     |               |                            |               |                            |               |
| 15.....          | 68                                  | 1,020         |                            |               |                            |               |
| 16.....          | 78                                  | 1,248         | 1,314                      | 21,024        |                            |               |
| 17.....          |                                     |               |                            |               |                            |               |
| 18.....          |                                     |               |                            |               |                            |               |
| 20.....          |                                     |               |                            |               |                            |               |
| 24.....          | 1,193                               | 28,632        |                            |               |                            |               |
| 25.....          |                                     |               |                            |               |                            |               |
| 26.....          |                                     |               |                            |               |                            |               |
| 32.....          |                                     |               |                            |               |                            |               |
| 36.....          | 1,837                               | 66,132        |                            |               |                            |               |
| 40.....          |                                     |               |                            |               |                            |               |
| 50.....          |                                     |               |                            |               |                            |               |
| 64.....          | 106                                 | 6,784         |                            |               |                            |               |
| 72.....          |                                     |               |                            |               |                            |               |
| Total .....      | 229,194                             | 825,755       | 56,120                     | 598,144       | 14,663                     | 18,944        |

| Number of ducts. | Chesapeake and Potomac Telephone Co. |               | Metropolitan Railroad Co. |               | Capital Traction Co. |               | Total.   |           |
|------------------|--------------------------------------|---------------|---------------------------|---------------|----------------------|---------------|----------|-----------|
|                  | Feet of conduit.                     | Feet of duct. | Feet of conduit.          | Feet of duct. | Feet of conduit.     | Feet of duct. | Conduit. | Duct.     |
| 1.....           | 15,596                               | 15,596        |                           |               |                      |               | 39,401   | 39,401    |
| 2.....           | 3,677                                | 7,354         |                           |               | 15,742               | 31,484        | 142,716  | 285,432   |
| 3.....           |                                      |               |                           |               |                      |               | 98       | 294       |
| 4.....           | 471                                  | 1,884         | 21,608                    | 86,432        | 8,720                | 34,880        | 82,371   | 329,485   |
| 6.....           | 23,111                               | 138,606       |                           |               | 7,320                | 43,920        | 77,778   | 466,068   |
| 7.....           | 82                                   | 574           |                           |               | 29                   | 203           | 111      | 777       |
| 8.....           | 18,090                               | 144,720       |                           |               | 2,761                | 22,088        | 23,892   | 191,136   |
| 9.....           | 114                                  | 1,026         |                           |               |                      |               | 7,492    | 60,618    |
| 10.....          |                                      |               |                           |               |                      |               | 88       | 880       |
| 12.....          | 4,963                                | 59,556        | 9,809                     | 117,708       |                      |               | 53,617   | 643,404   |
| 13.....          | 212                                  | 2,756         |                           |               |                      |               | 212      | 2,756     |
| 14.....          |                                      |               |                           |               | 4,257                | 59,598        | 4,257    | 59,598    |
| 15.....          |                                      |               |                           |               |                      |               | 68       | 1,020     |
| 16.....          | 5,825                                | 93,200        |                           |               |                      |               | 7,217    | 115,472   |
| 17.....          | 636                                  | 10,812        |                           |               |                      |               | 636      | 10,812    |
| 18.....          | 1,576                                | 28,368        |                           |               |                      |               | 1,576    | 28,368    |
| 20.....          | 26                                   | 520           |                           |               |                      |               | 26       | 520       |
| 22.....          |                                      |               |                           |               | 9,109                | 200,398       | 9,109    | 200,398   |
| 24.....          | 304                                  | 7,600         |                           |               |                      |               | 304      | 7,600     |
| 25.....          | 2,072                                | 49,728        |                           |               |                      |               | 3,265    | 78,360    |
| 26.....          |                                      |               |                           |               | 280                  | 7,280         | 280      | 7,280     |
| 32.....          | 465                                  | 14,880        |                           |               |                      |               | 465      | 14,880    |
| 36.....          | 26                                   | 936           |                           |               |                      |               | 1,863    | 67,068    |
| 40.....          | 1,534                                | 61,360        |                           |               |                      |               | 1,534    | 61,360    |
| 50.....          | 749                                  | 41,944        |                           |               |                      |               | 749      | 41,944    |
| 64.....          | 176                                  | 11,264        |                           |               |                      |               | 382      | 18,048    |
| 72.....          | 76                                   | 5,472         |                           |               |                      |               | 76       | 5,472     |
| Total .....      | 79,781                               | 698,216       | 31,417                    | 204,140       | 48,218               | 399,851       | 459,493  | 2,745,051 |

87.02 miles of conduit, containing 519.87 miles of duct.

## Summary of conduits, July 31, 1898—Continued.

|                                          | Length<br>of<br>bridges. | Conne-<br>tions. <sup>a</sup> | Hand-<br>holes. | Man-<br>holes. |
|------------------------------------------|--------------------------|-------------------------------|-----------------|----------------|
| United States Electric Lighting Co.....  | 260                      | 7, 098                        | 2, 351          | 900            |
| Potomac Electric Power Co.....           | 126                      |                               | 116             | 187            |
| Postal Telegraph Cable Co.....           |                          |                               |                 | 56             |
| Chesapeake and Potomac Telephone Co..... |                          |                               |                 | 23             |
| Metropolitan Railroad Co.....            | 169                      | 61                            |                 | 125            |
| Capital Traction Co.....                 | 126                      | 63, 109                       |                 | 181            |

<sup>a</sup> Exclusive of house connections.<sup>b</sup> Sewer connections.

## OVERHEAD WIRES.

The overhead-wire situation has improved considerably during the year, both as regards the appearance of the lines and the number of wires removed.

*United States Electric Lighting Company.*—In October the street department widened the roadway of Tenth street from D to F streets NW., necessitating either the moving of an overhead line of this company to the new curb or the abandonment of the poles and wires. As the conduit was destroyed by the street improvement, a new one was built, with the addition of two ducts to the original number of six, with the agreement on the part of the company to entirely remove the poles and wires. This was done, 8,990 feet of main wire, 1,846 feet of services, and six poles being removed.

This company also had 12,815 feet of wire on the poles of the Western Union Telegraph Company on Fifteenth street from Albaugh's alley to G street. Although the latter company removed their poles and wires from this street, those of the former had to remain, as the conduit capacity was entirely inadequate to hold them. This necessitated the retention of three of the old wooden poles and the replacement of nine others with iron ones. In addition to this, the company removed 3,415 feet of wire. In the alleys in squares 431 and 432, 1,920 feet of overhead mains were removed and the majority of the services placed underground. Some of them, however, were run along the walls of the buildings with an underground connection from a cable pole at the head of the alley. Owing to the removal of the telegraph poles, 10,150 feet of wires were taken down from the Western Union pole line from the corner of Ninth and C streets across Pennsylvania avenue to the corner of Seventh and C streets.

*Potomac Electric Power Company.*—All overhead wires of this company inside of the city limits have been removed, except two services 2,290 feet long, running principally over house tops and containing 5,230 feet of single wire. Outside of these limits no extensions of their lines have been made, and only three overhead services connected in.

*Chesapeake and Potomac Telephone Company.*—Under date of May 25, 1897, permit was issued to this company to erect a line of poles on the Military road from Brightwood avenue to Grant road and on Grant road to the Tennallytown road, which was afterwards changed by shifting the line from Military road to the Grant and Broad Branch roads, commencing at a point just west of Rock Creek. Twenty-four poles were erected on Military road west of Brightwood avenue and 11 on Nebraska avenue from the Loughborough road to the Tennallytown road, when further work was stopped by the board of control of Rock Creek Park, as they decided that they had no authority to issue the permit for the erection of the line. In order to get to the west of the park the company obtained permission (permit dated July 13) to erect poles on the Loughborough road from Nebraska avenue to Milwaukee street, and on that street to and across the Chain Bridge. They erected 94 poles and 13 fixtures on the bridge. They also obtained permission to replace 14 poles of the Postal Telegraph Cable Company on the Loughborough road from Nebraska avenue to the Tennallytown road. Under date of September 14, 1897, permission was granted them to replace their pole line on Fourteenth street extended from Brightwood avenue to Piney Branch, consisting of 71 poles, to one of 80 poles; under another permit of the same date to build a new line of poles from Piney Branch to Sixteenth and Howard streets along the Piney Branch road, 18 poles being erected; also, under same date, to replace 12 poles on Columbia road between Fifteenth and Eighteenth streets. This enabled them to connect their line on Brightwood avenue, at the Military road, to the line running to Tennallytown by way of Woodley road, and from Tennallytown to the Chain Bridge.

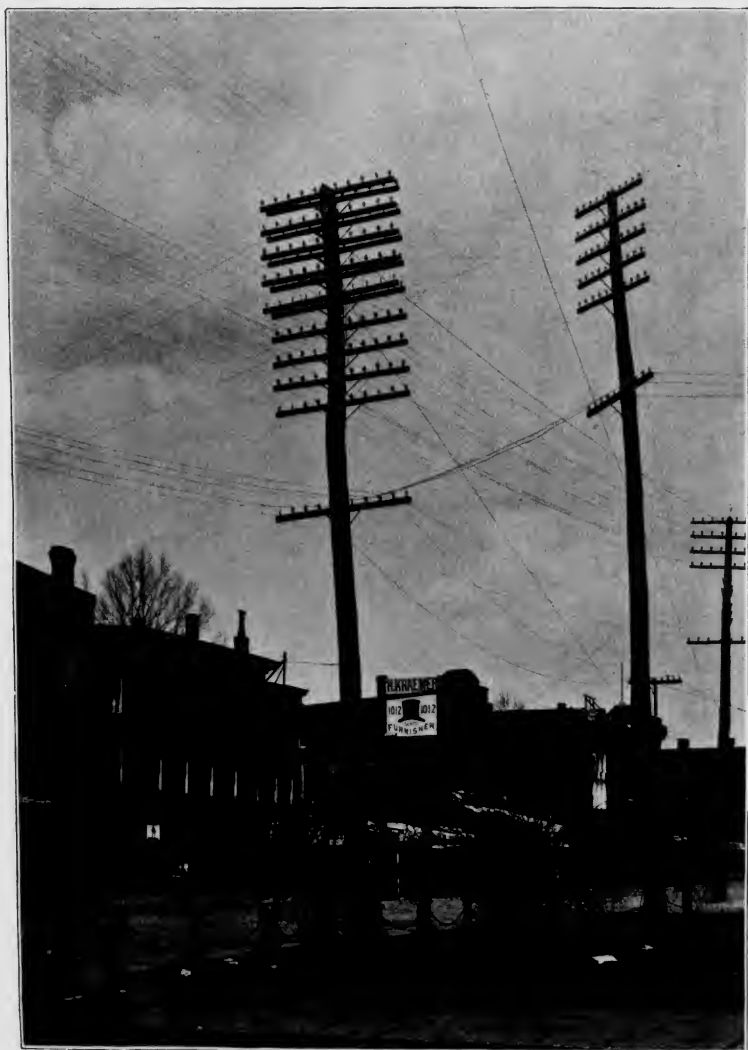
August 11, 1897, permit was issued to replace four and erect two poles on Binney street between Fourteenth and Fifteenth streets and to replace one and erect three poles on Princeton street between Thirteenth and Fourteenth streets.

September 30, 1897, permit was issued to erect poles on Fifteenth street near Grant street, and a guy pole at the northeast corner of Grant and Pine streets.





CORNER THIRTEEN-AND-A-HALF STREET AND PENNSYLVANIA AVENUE. APRIL, 1898.



CORNER SEVENTH STREET AND NEW YORK AVENUE NW. APRIL, 1898.

September 30, 1897, permit was issued to erect poles on Brightwood avenue from a point opposite the residence of Mr. Shoemaker to the District line. This work was not allowed to be done, however, as the legality of the permit was questioned in connection with poles on Chapin street, as indicated below.

October 26, 1897, permit was issued to replace three and erect one pole on Grant street between Pine and School streets.

November 1, 1897, permit was issued to replace three and erect three additional poles on Chapin street between Fourteenth and Fifteenth streets and to erect one pole in the alley south of Chapin street between said streets. Objection was raised by residents of Columbia Heights to the erection of the additional poles, and the work was stopped after a portion of the poles had been set. This matter of the erection of additional poles outside of the city limits was referred to the attorney of the District for an opinion, who stated that the Commissioners were without authority to grant such permission. The additional poles on Chapin street were then removed at the request of the Commissioners and the pavement restored to its original condition. Since November 27, 1897 (the date this opinion was rendered and in which the Commissioners concurred), no additional poles outside of the city limits have been erected by the company.

During the year they have rebuilt the following lines, erecting new and substantial poles:

Tennallytown road from Woodley lane to Loughborough road, 33 poles.

Fourteenth street extended from Brightwood avenue to Piney Branch, 70 poles replaced and 10 added.

Columbia road from Fifteenth to Eighteenth streets, 12 poles replaced and 6 added.

Columbia road from Fourteenth to Fifteenth streets, 5 poles replaced.

Maryland avenue from Ninth to Fifteenth streets NE., 18 poles replaced.

Numerous old poles have been replaced with new ones, and many new poles erected in the alleys in the city.

*Western Union Telegraph Company.*—This company has greatly improved their overhead system by replacing a large number of old poles with new ones and substituting copper for the old iron wire. The work that has been done is as follows:

The removal of their main offices from the corner of Fifteenth and F streets to the new Wyatt Building at the corner of Fourteenth and F streets necessitated a change in the routes of their main lines, which was accomplished by abandoning and removing the two lines of poles and wires on Fifteenth street from B street to Pennsylvania avenue, and one line on Fifteenth street from Pennsylvania avenue to G street, and by building a new line on Fourteenth street from B to G streets and placing the wires in cables. The work done under this permit involved the removal of, approximately, 453,990 feet of overhead wires, the removal of 44 line and 2 guy poles, the erection of 1 guy and 22 line poles, and the stringing of 23,538 feet of aerial cable. These cables are brought to a large pole at the office building, are carried down the pole on neatly arranged brackets, and then pass under the sidewalk through iron pipes to the terminal boards. This construction was the subject of Congressional inquiry, as shown by the following document (Senate No. 176, Fifty-fifth Congress, second session):

“TELEGRAPH POLES ON FOURTEENTH STREET NW., WASHINGTON, D. C.

“March 7, 1898.—Referred to the Committee on the District of Columbia and ordered to be printed.

“The Vice-President presented the following letter from the Commissioners of the District of Columbia, in response to resolution of the Senate of February 25, 1898, in relation to the erection of telegraph poles carrying overhead wires on Fourteenth street NW., in the city of Washington, D. C.

“OFFICE COMMISSIONERS OF THE DISTRICT OF COLUMBIA,

“Washington, March 2, 1898.

“SIR: In response to the Senate resolution of February 25, 1898, ‘That the Commissioners of the District of Columbia are directed to inform the Senate under what authority of law, and for what reason, telegraph poles carrying overhead wires have been erected on Fourteenth street NW., in the city of Washington,’ the Commissioners have the honor to submit the following:

“In November last the Western Union Telegraph Company, having in view the change of their main office from the corner of Fifteenth and F streets NW. to the corner of Fourteenth and F streets, made application for a permit to renew certain poles on Fifteenth street and G street NW., and to replace certain of their wires with aerial cables. The large number of poles and overhead wires in this neighborhood having been a source of many complaints to the Commissioners and of much contention with the companies using them, advantage was taken of the proposed change in the Western Union Telegraph Company’s lines to remedy the existing conditions in this section as much as possible under existing law.

"While it is not known that the Western Union Telegraph Company desired to replace its overhead wires by underground conduits, it is known that if they had so desired the Commissioners were without authority to issue them permits for the construction of the necessary conduits. The Western Union Telegraph Company was occupying the streets with its overhead lines under authority of the act of 1866, commonly known as the 'National telegraph act.' This act has been construed by the supreme court of the District of Columbia as pertaining to the District of Columbia to the same extent as it does to other portions of the United States, and the court held that all the municipal authorities had to do with the subject of the erection of poles and the stringing of wires thereon by the Western Union Telegraph Company was to regulate the exercise of the right granted by law—that is, to designate the streets in which poles might be erected, etc.

"Previous to any action by the Commissioners in this particular instance the matter was also submitted to the attorney for the District of Columbia, who was of the opinion that the act of Congress of 1888 with regard to overhead wires in the city of Washington, and its subsequent modification so far as electric light and telephone facilities are concerned, did not apply to telegraph companies which have availed themselves of the privileges of the national telegraph act. He was, therefore, of the opinion that there was no objection to granting the application of the telegraph company in this instance, subject to such regulations with regard to the location of the poles, etc., as might be necessary and proper for public safety. The rights of the telegraph company appearing to the Commissioners to be clear in this case, their authority extended only to a reasonable regulation of these rights, and, as before stated, due advantage was taken of the company's application to improve the overhead conditions in the section bounded by Thirteenth, Fifteenth, B, and G streets NW.

"After a careful consideration of the matter, a permit was issued to the telegraph company to erect certain poles and string thereon certain aerial cables on Fourteenth street and B street to G street NW, and on G street from Thirteen-and-a-half street to Fourteenth street. As a condition of this permit, the Western Union Telegraph Company is to remove a double line of poles on Fifteenth street, from B street to Pennsylvania avenue, and a single line of poles on same street from Pennsylvania avenue to G street, together with a number of other poles at various points and a large mass of single wires carried by these poles and house-top fixtures.

"The net result of these changes will be a reduction of 25 poles in the section referred to, and the substitution of a comparatively small number of aerial cables for a large mass of single wires, amounting in some instances to 129 on a single pole. A considerable improvement will be had in the overhead conditions in this section, when the work now in progress is completed, by the removal of the poles and wires referred to.

"Very respectfully, yours,

"JOHN W. ROSS,  
"President Board of Commissioners.

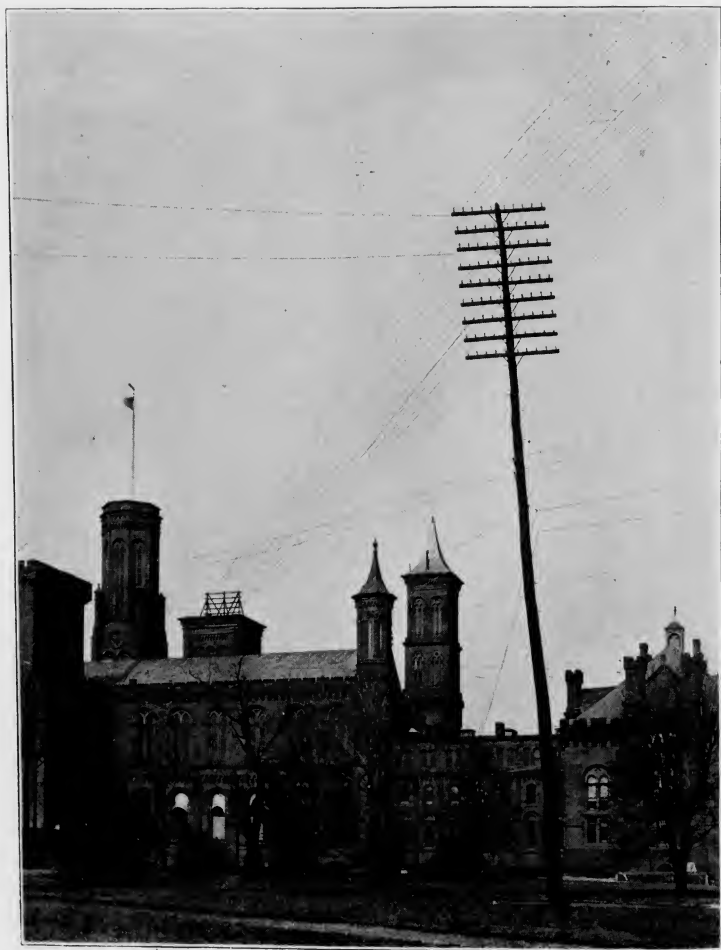
"HON. GARRET A. HOBART,  
"President of the Senate."

From Fourteenth and G streets NW. to Fifteenth and H streets NE. their old poles were replaced, the line materially strengthened, and on Florida avenue between New York avenue and Fifth street NE. removed to the south side of the avenue, thus avoiding crossing the avenue twice. One hundred and five poles were replaced. The branch line running to the State, War, and Navy Departments by way of B street, Seventeenth street, and New York avenue, was renewed, 20 old poles being replaced. Application was made by the company for permission to renew the line on C street from Thirteen-and-a-half street to Four-and-a-half street and through alleys to the Baltimore and Ohio depot at New Jersey avenue. At the request of the Commissioners, however, they agreed to consolidate that portion of the line on C street between Thirteen-and-a-half and Sixth streets with the line on B street between the same points, renewing the poles on the latter street as well as on the balance of the route. This work was under way at the close of the fiscal year. It was completed by July 31, the following amount of work being done: Forty-four line poles and 1 guy pole replaced; 2 line poles and 1 guy pole erected; 16 old poles removed.

*Mutual District Messenger Company.*—This company has continued its illegal stringing of wires, although only in one instance has it been detected and stopped. This was in Washington Heights, where two wires were strung from Wyoming avenue and Eighteenth street to Prospect avenue and Crescent street. They were stopped by the police during the work, but managed, nevertheless, to complete it. It was wires. They have declined to give the Commissioners that they removed the ligible description of the routes followed by their wires, for the reason that they prefer not to have it known where they have installed the burglar-alarm and call-box system. No adjustment nor control of their wires can be had unless their location is known.



CORNER NORTH CAPITOL AND B STREETS. APRIL, 1898.



SMITHSONIAN BUILDING FROM THE SOUTH. MARCH, 1898.

FIRE ALARM TELEGRAPH AND POLICE TELEPHONE SYSTEMS.

During the year a complete set of maps has been prepared showing the location of the District lines and the route of each circuit of the District fire alarm and telephone systems. This was completed in April, 1898, and the following table made from the records at that time. Since then several minor changes in some circuits have been made, but these will not materially affect the results.

Table showing the length of wire of the District fire alarm and police telegraph system and the amount on the poles of the various companies.

|                                         | Washing-<br>ton. | George-<br>town. | County.      | Total.      |         |
|-----------------------------------------|------------------|------------------|--------------|-------------|---------|
|                                         |                  |                  |              | Feet.       | Miles.  |
|                                         | <i>Feet.</i>     | <i>Feet.</i>     | <i>Feet.</i> |             |         |
| Chesapeake and Potomac Telephone Co.... | 556, 150         | 38, 500          | 126, 160     | 720, 810    | 136. 52 |
| District of Columbia .....              | 635, 795         | 56, 300          | 119, 640     | 811, 735    | 153. 73 |
| Western Union Telegraph Co.....         | 65, 770          | 15, 750          | 116, 160     | 197, 680    | 37. 44  |
| Postal Telegraph-Cable Co.....          | 22, 760          | .....            | 19, 800      | 42, 560     | 8. 06   |
| United States Government.....           | 5, 270           | 800              | 67, 100      | 73, 170     | 13. 86  |
| Railroads.....                          | 13, 700          | .....            | 26, 200      | 39, 900     | 7. 56   |
| House tops.....                         | 91, 165          | 7, 950           | 3, 850       | 102, 965    | 19. 50  |
| Arsenal grounds.....                    | 1, 500           | .....            | .....        | .....       | .....   |
| Navy-Yard Bridge.....                   | 9, 800           | .....            | .....        | .....       | .....   |
| Pennsylvania Avenue Bridge.....         | 1, 500           | .....            | .....        | .....       | .....   |
| Total { Feet.....                       | 1, 403, 410      | 119, 300         | 478, 910     | 2, 001, 620 | .....   |
| { Miles.....                            | 266. 79          | 22. 59           | 90. 71       | .....       | 379. 09 |

Since the declaration of war with Spain it has been necessary to string many wires to provide adequate service for the various Executive Departments. This has been done only by the Western Union Telegraph Company and by the United States Government, but as no permits were issued and the work not supervised by this department, no record has been made in this increase in the overhead construction. No new pole lines were constructed, however, the existing lines being used in every case.

A map of that portion of the District inside the fire limits, showing the main lines of overhead wires, is submitted with this report. A few of the trunk lines have been extended to the margin of the map; they exist, however, in nearly every case as far as the District line. Several photographs are also inserted to show some of the overhead conditions.

Number of telegraph and telephone poles in the District of Columbia.

|                                          | Inside city<br>limits. |               | Outside city<br>limits. |               | Total.         |               |
|------------------------------------------|------------------------|---------------|-------------------------|---------------|----------------|---------------|
|                                          | Line<br>poles.         | Guy<br>poles. | Line<br>poles.          | Guy<br>poles. | Line<br>poles. | Guy<br>poles. |
| District of Columbia.....                | 607                    | 17            | 294                     | 5             | 901            | 22            |
| Chesapeake and Potomac Telephone Co..... | 1, 126                 | 143           | 1, 318                  | 99            | 2, 444         | 242           |
| Western Union Telegraph Co.....          | 543                    | 4             | 890                     | 2             | 1, 442         | 6             |
| Postal Telegraph-Cable Co.....           | 107                    | .....         | 366                     | 6             | 473            | 6             |
| United States Government.....            | 56                     | .....         | 243                     | .....         | 299            | .....         |
| Printing Telegraph Co.....               | .....                  | .....         | 63                      | .....         | 63             | .....         |
| Railroads.....                           | 106                    | .....         | 416                     | .....         | 522            | .....         |
| Total.....                               | 2, 545                 | 164           | 3, 599                  | 112           | 6, 144         | 276           |

ELECTROLYSIS.

In October, 1897, a second report on the subject of electrolysis was submitted, with numerous diagrams and tables showing the results of the tests made by the department. This report was printed for the use of the Senate Committee on the District of Columbia, and subsequently embodied in their report on Senate bill 3647, "For the protection of subsurface pipes, cables, wires, and other metallic constructions in the District of Columbia from damage from electrolysis," which bill was submitted to the Commissioners. This report is Senate Report No. 675, Fifty-fifth Congress, second session. Since making the second report referred to above, several instances of destruction to pipes have occurred and numerous tests have been made. These are inserted here so as to furnish a complete account of this subject to date and as a supplement to the printed report.

WASHINGTON, D. C., *February 1, 1898.*

SIR: I have the honor to submit the following report of additional tests made in the District in relation to the electrolysis of underground pipes and cables:

The Washington Gaslight Company have a 3-inch pipe running from the Standard Oil Company's works at the corner of Half and K streets SE., through a pump and receiving tank at the corner of First and L streets SW. to receiving and overflow tanks at the intersection of New Hampshire and Virginia avenues NW., following the route shown by red line on the accompanying map. This pipe line is used to convey naphtha from the Standard Oil Company's tanks to the works of the gas company at New Hampshire and Virginia avenues, when the river is so blocked with ice that barges can not be brought up to the company's wharf. In December, 1897, while attempting to pump naphtha through the line, leaks were developed at Four-and-a-half street and Virginia avenue SW., and on Virginia avenue between Third and Four-and-a-half streets. So great was the leak at the latter point that considerable naphtha flowed through the ground and became ignited by a match carelessly thrown down by a boy. A fire resulted, burning up several panels of the fence inclosing the tracks of the Baltimore and Potomac Railroad Company. The latter company sent a bill for damages to the amount of \$45.60 to the gas company, which bill has been paid. Upon excavating, the gas company found two lengths of pipe eaten out, both of which they have replaced.

Figure 1 is a photograph of a section of the pipe taken from the northwest corner of Four-and-a-half street and Virginia avenue, showing the hole eaten out by the current. Figure 2 is a photograph of a section of the pipe taken out from the other location between Third and Four-and-a-half streets, where the fire occurred, showing two holes which were directly under two small water-service pipes crossing the oil pipe at right angles.

On the afternoon of January 4, 1898, the pipe line at Four-and-a-half street and Virginia avenue was uncovered and readings taken. Before unjointing, the oil main was found to be from one-half to 1 volt positive to the water main, one-half to 1 volt positive to the negative return of the Potomac Electric Power Company; one-third to one-half volt positive to the rails of the Metropolitan Railroad Company; one-third volt positive to the lead cover of the cables of the latter company. After unjointing, the difference of potential between the two ends of the pipe was steadily 1 volt toward the west. An ammeter inserted in series with the pipe line showed a flow of 4 amperes toward the west. The water main was one-half volt positive to the return of the Potomac Electric Power Company. At night the conditions changed considerably, owing to the current from the latter company's cables. The oil main changed to  $2\frac{3}{4}$  to  $3\frac{1}{4}$  volts negative to the return of the latter company, with a difference of potential between the two ends of the pipe of from  $3\frac{1}{2}$  to 4 volts in the same direction as before, and with an increase of current to 6 amperes.

Two days after (January 6, 1898), the old main was uncovered on Virginia avenue between Third and Four-and-a-half streets and similar tests made, this time in the presence of the superintendent of the Potomac Electric Power Company. In the daytime the oil main was found one-third to one-half volt positive to the return of the Potomac Electric Power Company; one-third to one-half volt positive to the tracks of both the Metropolitan Railroad and the Baltimore and Potomac Railroad, and  $1\frac{1}{2}$  to 2 volts positive to the water-service pipes. The difference of potential between the two ends of the pipe was  $1\frac{1}{2}$  volts toward the west, with a flow of  $2\frac{1}{2}$  to 3 amperes. At night the readings were, oil main 1 volt positive to water services, 4 to  $4\frac{1}{4}$  volts negative to the return of the Potomac Electric Power Company, with a difference of 1 volt between ends of the pipe and a current of 6 amperes through it.

On the same afternoon tests were made at the receiving tank of the naphtha at the intersection of New Hampshire and Virginia avenues. The pipe where it enters the tank was disconnected, and a difference of  $3\frac{1}{2}$  volts found between it and the tank. On inserting an ammeter a current of 8 amperes was obtained. The workmen at this place refused at first to disconnect the pipe, as they had noticed sparking there a few weeks before when making other connections, and were afraid to work above the tank, which is 10 feet in diameter and 10 feet high, and was full of naphtha. The joint was bridged around, however, before breaking it, so as to prevent any sparking.

On the afternoon of January 29, 1898, the pipe line was uncovered at First street and Delaware avenue SW. and the pipe cut. It was found to be two-thirds volt positive to the water main, with  $1\frac{1}{2}$  volts between ends and a current of 2 amperes and L streets SW., where a difference of potential of 1 volt and a current of 2 amperes were found. No tests were made at these two points at night.

As the investigation of this case is not yet completed, no positive theory can be advanced concerning it. It can be stated, however, that during the nighttime when the arc lamps maintained by the Potomac Electric Power Company are burning and considerable current is being sent through their cables in Four-and-a-half street, that



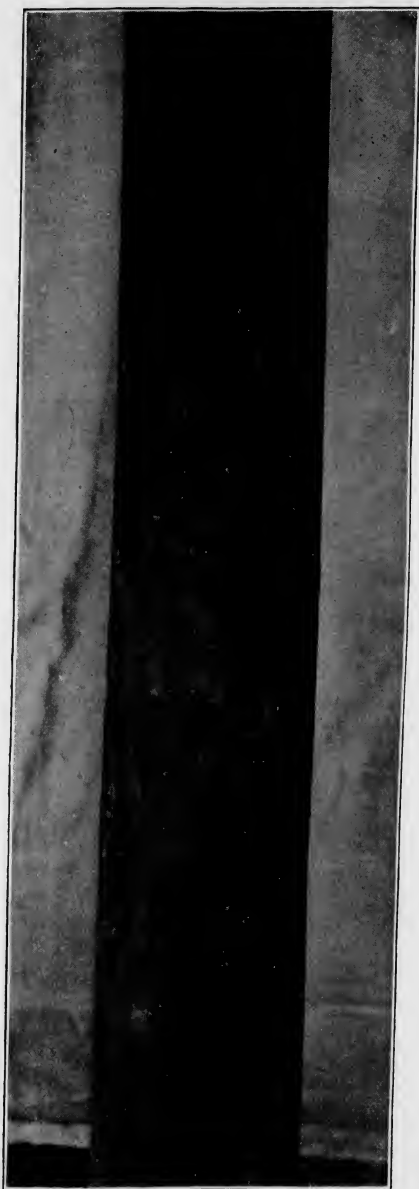


FIGURE 1. SHOWING SECTION OF 3-INCH IRON GAS  
MAIN REMOVED FROM CORNER OF FOUR-AND-A-  
HALF STREET AND VIRGINIA AVENUE SW.



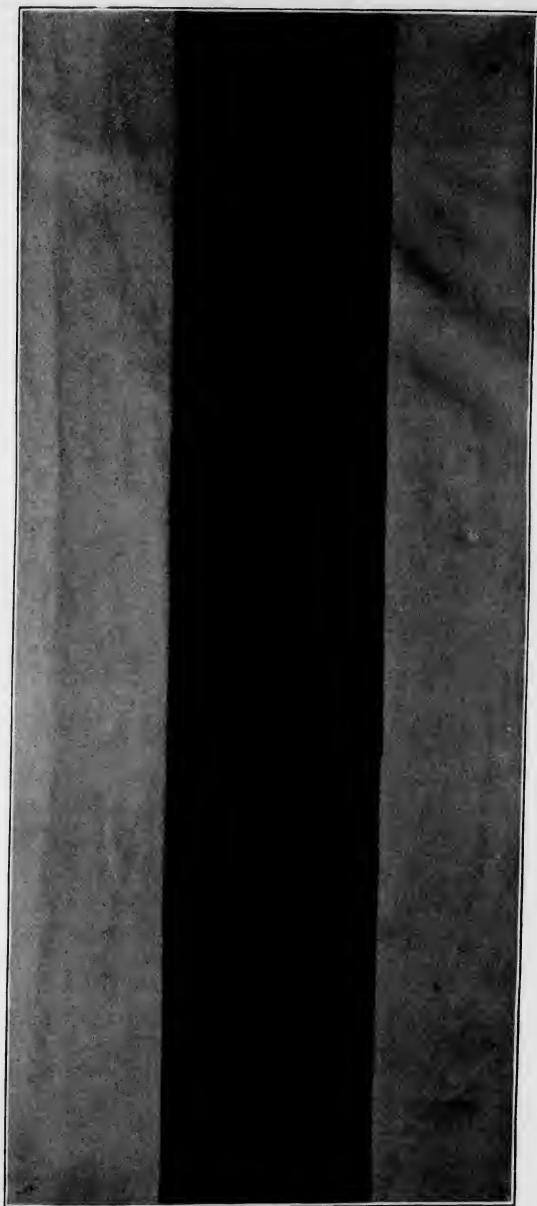


FIGURE 2. SHOWING SECTION OF 3-INCH IRON GAS MAIN REMOVED FROM VIRGINIA AVENUE BETWEEN THIRD AND FOUR-AND-A-HALF STREETS SW.



the conditions in the pipe line are materially changed, a great amount of current being present. The receiving tank at the corner of First and L streets SW. is 20 feet in diameter and 12 feet high. The receiving and overflow tanks at New Hampshire and Virginia avenues are, respectively, 10 feet by 10 and 20 feet by 10. The tanks present a large surface area in contact with the ground, and, being connected by a pipe line, the joints of which are screw joints and therefore well connected electrically, form an easy path for any current seeking a return through other paths than those provided for it. The larger amount of current at New Hampshire and Virginia avenues and its flow in a westerly direction toward the station of the Potomac Electric Power Company tend to show that the current found in the pipe line is generated there.

Other evidence of electrolytic action has recently been brought to light by the destruction of the lead-covered cables of the Chesapeake and Potomac Telephone Company at Twenty-second and G streets NW. A portion of the conduit system of this company ends at the above corner, from which the wires run overhead to the corner of Twenty-ninth and K streets. At the latter corner, where another set of underground cables ends, the company have bonded the lead covers to the tracks of the Baltimore and Ohio Railroad, to which the Potomac Electric Power Company have also connected the negative pole of their generators. The telephone cable recently drawn into the G street conduit to the corner of Twenty-second street has been badly eaten up, and to protect it the company have just run a heavy copper wire from this latter corner to Twenty-ninth and K streets, and have connected it to the lead cables and the Baltimore and Ohio tracks. I have not seen the results of the tests at Twenty-second and G streets made by Mr. Crandall, electrician for the telephone company, but they will undoubtedly be furnished to the Commissioners if asked for. It would be well, I think, to have them on record, since this department has not yet had an opportunity to make any at that point.

The following extract is taken from the Electrical World of November 13, 1897:

*"Canadian notes.*

*"OTTAWA, ONTARIO, November 8, 1897.*

"The director of the Meteorological Observatory at Toronto has interviewed the Government in respect to the proposed removal of the magnetic instruments in the observatory to another location. A spot about 9 miles from Toronto has been selected, which will be free from the influences of the electric railway system which has destroyed the usefulness of the observatory in Toronto."

Respectfully submitted.

WALTER C. ALLEN,  
*Inspector of Electric Lighting.*

Capt. W. M. BLACK,  
*Engineer Commissioner, District of Columbia.*

WASHINGTON, March 29, 1898.

SIR: Since making a supplemental report on electrolysis (dated February 1, 1898), several other instances of destruction to pipes have occurred and one formal complaint made to the Commissioners.

On February 9 tests were made on the lead cable of the telephone company at Twenty-ninth and K streets NW. to see if the conditions found there during the day were changed by the turning on of the public arc lamps at night. As stated in my printed report, the telephone cables at this point carry a great deal of current, being bonded to the rails of the Baltimore and Ohio Railroad on K street. At noon, when the output at the station of the Potomac Electric Power Company was 625 amperes, the cables were returning 60 amperes through this track connection. At 7 o'clock p. m. of the same day, after the arc lamps were lighted, when the output was 1,000 amperes at the station, the current in the cables remained the same. The arc-light circuits of the Potomac Electric Power Company were well insulated at that time, as were their other circuits not connected to trolley roads. The conclusions to be drawn from this are that the current found in the cables is due to the grounded return of these roads.

On February 24 another test was made at Twenty ninth and K streets, at which time the Potomac Electric Power Company were not supplying current to the Brightwood Railroad. A considerable reduction in the amount of current in the cables was perceptible, the maximum reading being 20 amperes, one-third of the previous amount.

On March 28 a lead water-service pipe to premises 3330 M street NW. was removed and found badly eaten. This service was laid sometime in June or July, 1897, under permit dated June 10, 1897. A section of this pipe, together with the brass stop-cock now in this office, shows how destructive the action has been.

Another case of corroded lead service pipe was found at 932 K street NW., where a pipe laid in July, 1897, was removed in February, 1898. The iron service pipe in an adjoining house (936 K street NW.) was also badly eaten, and had to be replaced.

The formal complaint mentioned above was made by Frank Fauth, copy of which, together with my indorsement, is attached. The remedy which he says the railroad company made sometime ago was highly objectionable. It consisted in connecting the tracks by a heavy copper wire directly to the water pipes at the company's car barn, thereby forcing the current into the mains, and undoubtedly being the direct cause of the destruction of the lead pipe leading to 3330 M street NW. A means of making a good return for this road was offered the company in September, 1897, but they have so far failed to avail themselves of it. They have, however, removed the connection between their tracks and the mains, which makes the condition at the Foxall road more unfavorable.

Very respectfully,

Capt. W. M. BLACK,  
*Engineer Commissioner, District of Columbia.*

WALTER C. ALLEN,  
*Inspector of Electric Lighting.*

WASHINGTON, D. C., March 24, 1898.

Hon. COMMISSIONERS, Washington, D. C.:

I most respectfully call your attention to the condition of the tracks of the Great Falls Railroad crossing at the intersection of Foxall and Conduit roads, which are exposed to the surface and contain a current of electricity which is dangerous and liable to cause serious accidents to persons crossing in vehicles, by means of horses receiving shocks of electricity when they happen to step on the rails. I am compelled to cross these tracks two or three times a day, and am in danger of my horse running away and causing serious damage both to myself and vehicle.

This same trouble was the cause of much complaint not long ago, and was remedied by the railroad company, but has now returned.

Hoping this will receive your immediate attention and avoid some serious accident, I am,

Very respectfully,

FRANK FAUTH,  
*Corner Foxall and New Cut Roads, Washington, D. C.*

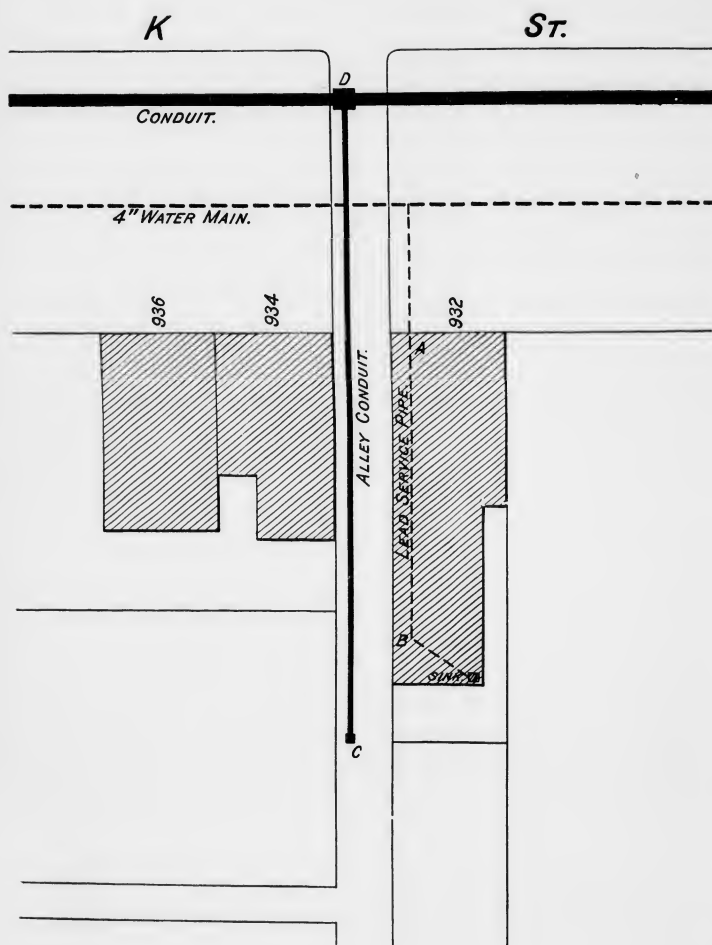
[First indorsement.]

MARCH 24, 1898.

Respectfully forwarded to the Engineer Commissioner, through Captain Burt, with the following report: The Washington and Great Falls Electric Railway Company have within the last few days removed the connection between their tracks and the water mains, which they were requested to do some months ago. While this connection existed, the difference in potential between the tracks and the water-service pipe at the intersection of Foxall and Conduit roads was 15 volts maximum. Tests made on the 23d of this month, after removal of said connection, showed a difference of potential as high as 80 volts at said location. The superintendent of the railroad company informed me that he would put in the grounded connection at Thirty-sixth street between the tracks and the return wire in the Potomac Electric Power Company's conduit this week, which they were ordered to do some months ago. This will remove the danger to horses crossing the tracks at the Conduit road and also relieve the water mains of the burden of carrying the current to the station. Until this is done the undesirable conditions at Foxall road, as stated in accompanying communication, will exist, and under favorable circumstances the voltage at this point is sufficient to give the animals crossing the tracks quite a considerable shock. The policy of delay pursued by this company in complying with the request of the Commissioners of date of September 30, 1897, in reference to the installation of this return wire at Thirty-sixth street should not be further countenanced. I would recommend that they be informed that unless they comply with said request within three days, the work will be done by the District at their expense. Their superintendent informed me that he had sufficient wire on hand to make the required connection, but that his men are employed at other points on the line on work of a pressing nature.

W. C. ALLEN,  
*Inspector of Electric Lighting.*











LEAD PIPE REMOVED FROM No. 932 K STREET NW.

WASHINGTON, April 13, 1898.

SIR: I have the honor to report the results of tests made at the premises 932 K street NW., where two lengths of lead service pipe have been eaten out since October 30, 1897, due to electrolytic action. Tests made on the 11th instant showed a flow of current of  $1\frac{1}{2}$  amperes in the water-service pipe (which was disconnected by the plumber) and a difference of  $8\frac{1}{2}$  volts between the two ends, the direction of the current being from the front to the rear of the premises. An examination of the handhole in the conduit of the United States Electric Lighting Company in the alley (at point marked C on accompanying plat) showed that two of the three service wires were entirely eaten through, and the insulation on the neutral wire gone and the wire itself left bare and under water.

Tests at the manhole (point marked D) at the mouth of the alley showed that there was a cross between the copper of the positive main and the lead sheath of the cable.

A leak was thus established from the positive to the neutral main, the current being carried by the house service pipes from the street to the bare connection in the handhole, and where it left the lead pipe (at B) the corrosion occurred.

In October, 1897, the entire length of lead pipe was renewed, being relaid in the ground. In March, 1898, this was again removed and galvanized-iron pipe run from A along the ceiling of the basement to the sink in the kitchen at the rear of the house. The owner of the premises states that the cost of all this work is over \$100, and that he has made demand upon the United States Electric Lighting Company for damages.

The service wires running down the alley have been disconnected from the mains at the mouth of the alley and the defective portion of the positive main replaced, thus removing the cause of the trouble.

An iron service pipe in premises 936 K street was also eaten out a few months ago, probably due to the same cause.

The attached photograph is a view of a portion of the corroded lead pipe from 932 K street, which was laid in October, 1897, and removed in March, 1898.

Very respectfully,

WALTER C. ALLEN,  
*Inspector of Electric Lighting.*

CAPT. W. M. BLACK,  
*Engineer Commissioner, District of Columbia.*

A bill prepared by the Commissioners for the protection of underground constructions was introduced in Congress at its last session and was passed by the Senate, but failed of passage in the House. An amendment to the District appropriation bill covering the same ground was also made by the Senate and agreed to by the House, but, together with the amendments concerning overhead wires and conduits, was stricken from the bill at its final consideration in conference. This legislation, if passed, would have compelled the several electric roads in the District using the single trolley to substitute the double-trolley system. The only laws regulating the use of grounded circuits now in force are the following police regulations adopted by the Commissioners:

"ARTICLE XVII. SECTION 1. The furnishing of electric light or power on a circuit any portion of which is through a grounded return, or which is intentionally grounded, will not be permitted, excepting in the power stations, cars, and car houses of electric railways, and at street crossings required to be lighted by any railway company under the terms of its charter; nor shall any dynamo with one pole grounded be used to furnish electric light or power except for the purposes above stated.

"SEC. 2. Any person violating any provision of this article shall, upon conviction thereof in the police court, be punished by a fine of not less than \$5 nor more than \$50 for each offense.

"SEC. 3. It shall be unlawful for any feed or return wire that is a portion of any electric circuit used for furnishing electric current for light, heat, or power purposes to be connected to or with any water main or water-service pipe, or any metallic construction directly or indirectly in connection with such main or service pipe. For any violation of this regulation the supply of water will be stopped and will be restored only upon compliance with this regulation and the payment of the cost and expense of turning the water on again."

In granting franchises to street railway companies in the District of Columbia, Congress at its last session inserted the following provisions:

[In amending the charter of the Capital Railway Company (Public, No. 135).]

"That the Capital Railway Company is hereby authorized to install and use the double overhead trolley system on the Navy-Yard bridge for the purpose of propelling its cars across the same."

[In extending the route of the Columbia Railway Company (Public, No. 132).]

"And provided further, That overhead trolleys shall not be used on the lines of said company farther west on said railroad than Fifteenth street northeast. That wherever electric power propulsion is adopted upon the extension herein authorized, or on any other portion of the line of said Columbia Railway Company, no portion of the electric circuit shall be through the earth, but a return circuit of proper capacity and located similarly to the feed-wire circuit shall be provided for the electrical current, and that whenever the trolley system is used, each car shall be provided with a double trolley, and that no earth connection shall be made with any dynamo furnishing power for the road."

[Act incorporating the East Washington Heights Traction Company (Public, No. 148).]

"SEC. 9. That the said company may run its cars by the overhead trolley electric system, or such other electric or mechanical system as the Commissioners of the District of Columbia may approve. \* \* \* *Provided*, That, if electric power by trolley be used, a return wire, similar in capacity and insulation to the feed wire, shall be provided, and each car shall be provided with a double trolley, and no pole of any dynamo furnishing power to the railway shall be connected with the earth."

[An act to incorporate the Washington and University Railroad Company of the District of Columbia (Public, No. 202).]

"SEC. 3. Motive power. That the motive power shall be electricity, and if the trolley system is used, a return wire of equal capacity to the feed wire, and similarly insulated, must be provided, and each car shall be equipped with a double trolley. No portion of the electrical circuit shall, under any circumstances, be allowed to pass through the earth, and neither pole of any dynamo furnishing power to the line shall be grounded."

Very respectfully submitted,

WALTER C. ALLEN,  
*Inspector of Electric Lighting.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner, District of Columbia.*

## REPORT OF THE INSPECTOR OF GAS AND METERS.

WASHINGTON, June 30, 1898.

SIR: The illuminating power of the gas supplied by the Washington Gas Light Company during the past year has been practically the same as for the year ending June 23, 1897.

The mean average illuminating power determined at the three laboratories was found to equal 25.72 candles, being 0.12 of one candle less than the average found in 1897. The maximum average illuminating power was 29.03 candles, being 0.58 of one candle less than the average found in 1897. The minimum average illuminating power was 22.16 candles, being 0.92 of one candle less than the average found in 1897.

The average illuminating power of the gas determined at the central laboratory, corner Tenth and D streets NW., was found to equal 25.45 candles; the highest illuminating power 28.80 candles; the lowest illuminating power 21.46 candles.

The average illuminating power of the gas determined at the southeast laboratory, corner Fifth and D streets SE., was found to equal 25.91 candles; the highest illuminating power 29.03 candles; the lowest illuminating power 22.65 candles.

The average illuminating power of the gas determined at the northwest laboratory, 1335 Fourteenth street NW., was found to equal 25.80 candles; the highest illuminating power 29.27 candles; the lowest illuminating power 22.38 candles.

On three occasions during the year the average illuminating power of the gas supplied by the Washington Gas Light Company was reported to be less than 25 candles, namely: January 4, 1898, 24.97 candles; January 20, 24.72 candles; April 27, 23.37 candles. On April 28 the illuminating power was 24.99 candles. That being only one one-hundredth of one candle less than the required power, no notice of default was served on the company.

The default reported on April 27, 1898, was the greatest of any deviation from the required standard that has occurred during the past two years, the illuminating power of the gas on that occasion being considerably depressed at all the laboratories.

The average quantity of ammonia found in 100 cubic feet during the year 1898 was 0.66 of 1 grain; being 0.23 of 1 grain less than the average for the year 1897.



Reno

Langdon

CONVENT OF VISITATION,  
GEORGETOWN UNIVERSITY.

NEW CUT ROAD

CONDUIT ROAD

Rosslyn

Deanewood

WIDTH OF STREETS AND AVENUES

North

South

East

West

Avenues

NEW JERSEY

NEW YORK

NEW HAMPSHIRE

MAINE

VERMONT

NEW YORK

NEW YORK

NEW YORK

NEW YORK

NEW YORK

NEW YORK

NEW YORK

NEW YORK

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MAP

OF THE

CITY OF WASHINGTON

SHOWING THE

MAIN OVERHEAD LINES

INSIDE OF THE  
FIRE LIMITS

- USELECTRIC LIGHTING CO.
- POSTAL TELEGRAPH-CABLE CO.
- WESTERN UNION TELEGRAPH CO.
- POTOMAC ELECTRIC POWER CO.
- CHESAPEAKE AND POTOMAC TELEPHONE CO.
- U.S. GOVERNMENT
- DISTRICT OF COLUMBIA
- RAILROAD
- FIRE LIMITS



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The average quantity of sulphur found in 100 cubic feet during the year 1898 was 5.67 grains; being an increase of 1.73 grains over the average for the year 1897. This increase in the quantity of sulphur found in the gas supplied by this company was no doubt due to a larger per cent of coal gas being manufactured during the year 1898, and should not be considered as an objectionable feature in the workings of the company, as I am of the opinion that it is an advantage to have as large a per cent of coal gas in the mixed gases supplied for consumers' use as the company is willing to furnish, notwithstanding that the increased quantity of coal gas manufactured necessitates a correspondingly larger per cent of sulphur to be present in the purified gas.

The law in force in the District of Columbia allows 20 grains of sulphur in every form in 100 cubic feet of gas; so, under the conditions existing during the past year, the quantity of sulphur found is safely within the limits prescribed.

On fifty-eight occasions during the year ending June 24, 1898, the impurity known as sulphureted hydrogen was found to be present in the gas supplied by the Washington Gaslight Company, as follows: Central laboratory, corner Tenth and D streets NW., seven occasions; Southeast laboratory, Fifth and D streets SE., four occasions; Northwest laboratory, 1335 Fourteenth street NW., forty-seven occasions. The above results show a considerable falling off in the presence of this objectionable sulphur compound during the past year. During the year ending June 24, 1897, sulphureted hydrogen was present on one hundred and fifty-five occasions.

The improved facilities that the Washington Gaslight Company possesses at present for the thorough purification of the illuminating gas supplied to consumers is the reason for the favorable change that has occurred regarding this impurity, and it is expected that during the ensuing year sulphureted hydrogen will be entirely eliminated from the gas furnished by this company.

The specific gravity of the gas supplied by the Washington Gaslight Company during the year ending June 23, 1898, was as follows:

Northwest laboratory:

|               |       |
|---------------|-------|
| Average ..... | 0.613 |
| Highest ..... | .656  |
| Lowest .....  | .538  |

Southeast laboratory:

|               |      |
|---------------|------|
| Average ..... | .601 |
| Highest ..... | .617 |
| Lowest .....  | .555 |

Central laboratory:

|               |      |
|---------------|------|
| Average ..... | .608 |
| Highest ..... | .646 |
| Lowest .....  | .518 |

The pressure of the gas supplied by the Washington Gaslight Company during the year ending June 30, 1898, was as follows:

|                                | Inches. |
|--------------------------------|---------|
| <b>Central laboratory:</b>     |         |
| Average mean pressure .....    | 1.56    |
| Average maximum pressure ..... | 2.02    |
| Average minimum pressure ..... | 1.20    |
| <b>Southeast laboratory:</b>   |         |
| Average mean pressure .....    | 2.05    |
| Average maximum pressure ..... | 2.66    |
| Average minimum pressure ..... | 1.58    |
| <b>Northwest laboratory:</b>   |         |
| Average mean pressure .....    | 1.77    |
| Average maximum pressure ..... | 2.27    |
| Average minimum pressure ..... | 1.40    |

The above record of pressure was taken between the hours of sunset and sunrise. The gas supplied by the Washington Gaslight Company during the past year, inspected at the Central laboratory, corner Tenth and D streets NW., was found on many occasions to be of less illuminating power than 25 candles, notwithstanding that the monthly averages of this laboratory (with the exception of the months of January, April, and May, when the average power was only 24.97, 24.98, and 24.80 candles) were over 25 candles. On a few occasions similar conditions existed at the Northwest and Southeast laboratories, although the power at the two last-mentioned testing stations was never less than 25 candles by monthly average. I think it more than probable that the cause of the variations referred to was largely due to a want of uniformity in the make of gas at the two manufacturing plants of the company. Unless the output of gas from the Southeast and Northwest gas works is practically of the same illuminating power, considerable difference will at times be found in the results of tests made at the three laboratories located in the southeast, northwest, and central parts of the city. Accidental causes may occasionally arise which



will prevent the illuminating power from being in accord in all parts of the city, but occasions of this kind are not very frequent where ordinary care and prudence are exercised in the make of gas and enrichment of the same.

The illuminating power and purity of the gas supplied by the Georgetown Gaslight Company during the year ending June 23, 1898, was as follows:

The mean average illuminating power, determined at laboratory 1338 Thirty-second street N.W., was found to equal 27.78 candles, being 0.59 of 1 candle in excess of the average found in 1897. The maximum average illuminating power was 32.95 candles, being 0.90 of 1 candle in excess of the average found in 1897. The minimum average illuminating power was 23.65 candles, being 0.89 of 1 candle in excess of the average found in 1897.

On seven occasions during the year the illuminating power of the gas supplied by the Georgetown Gaslight Company was reported to be less than 25 candles. On one occasion only was the illuminating power found to be less than 24 candles, namely, October 23, 1897, when the power was only equal to 23.65 candles, the other defaults were only a fraction of 1 candle less than the required standard.

The gas manufactured by this company is a product of coal enriched with oil. It is of fine quality, yielding a light equal to 27.78 candles by average, with a consumption of only 5 cubic feet per hour. On several occasions the gas was so rich that the flame (using the Bray burner No. 7, present standard) was smoky; and as similar conditions are at times likely to exist, I renew the suggestion made in previous annual report, that consumers should use burners with finer openings than formerly, so as to guard against smoky flames.

The average quantity of ammonia found in 100 cubic feet during the year was 3.30 grains, being 0.02 of 1 grain less than the average for the year 1897.

On eighteen occasions, between June 28 and August 2, 1897, the quantity of ammonia found in the gas of this company exceeded the 5 grains allowed in 100 cubic feet. The excess of ammonia was due, so I have been informed, to the fact that the standard scrubber, an apparatus used for the purpose of washing the gas, was out of order and had to be repaired; so it was not until after August 2 that, this object being accomplished, the impurity was again brought within lawful limits.

The average quantity of sulphur found in 100 cubic feet during the year ending June 23, 1898, was 12.23 grains, being 0.61 of 1 grain increase compared with the quantity found during the year 1897.

On five occasions during the year the gas supplied by this company contained sulphuretted hydrogen. The presence of this impurity was caused by a breakdown at the works, which could not have been prevented by ordinary care and prudence.

The specific gravity of Georgetown gas, laboratory 1338 Thirty-second street N.W., was as follows:

|               |       |
|---------------|-------|
| Average ..... | 0.514 |
| Highest ..... | .572  |
| Lowest .....  | .466  |

The pressure of the gas supplied by the Georgetown Gaslight Company during the year ending June 30, 1898, was as follows:

|                                |         |
|--------------------------------|---------|
|                                | Inches. |
| Average mean pressure.....     | 2.01    |
| Average maximum pressure ..... | 3.14    |
| Average minimum pressure ..... | 1.33    |

The above record of pressure was taken between the hours of sunset and sunrise.

#### INSPECTION OF GAS METERS.

During the year ending June 23, 1898, this office inspected and proved 3,241 gas meters.

With the exception of three meters tested for the Alexandria Gas Works, the above-named meters were inspected and proved for the Washington and Georgetown gaslight companies, and for consumers of gas in Washington and Georgetown. One hundred and seventy-two registered fast, average error 4.78 per cent; 506 registered slow, average error 12.47 per cent; 2,440 registered within the limits allowed; and 120 did not register the gas flowing through them.

One thousand and twenty-six of the above-described meters were ordered out of service, being complained of by the gas companies and consumers of gas; 404 were complained of by consumers, they believing them to be incorrect; 156 registered fast, average error 4.88 per cent; 35 registered slow, average error 7.76 per cent; 213 registered within the limits allowed, namely, 2 per cent either way. Six hundred companies; 14 registered fast, average error 4.60 per cent; 470 registered slow, average error 17.88 per cent; 18 registered within the limits allowed; and 120 did not register the gas flowing through them.

Six hundred and fourteen of the meters complained of by the gas companies were tested for the Washington Gaslight Company. The reason so many were found registering slow and not registering at all is owing to the fact that meters of this class are removed from service by this company, the manager believing them to be incorrect, and before being brought to this office are tested in the company's shop to ascertain their condition. Under the conditions named it is not likely that the inspector would often find meters of this description registering fast or registering within the limits allowed by law.

The sum of \$1,155.10 was collected for the inspection of gas meters by this office during the year ending June 23, 1898. The same was paid to the collector of the District of Columbia.

In the annual reports of this office for the past four years it has been represented that an additional assistant is needed. A suitable person should be appointed at an annual compensation of \$800, whose duties shall be to assist in the laboratory work, inspection of meters, and perform clerical work under the direction of the inspector of gas and meters.

I again renew the recommendation that the salary of the messenger be increased from \$480 to \$600 per annum. The laboratory work performed by this employee, aside from the duties of a messenger, is the reason why this increase is asked.

Respectfully submitted.

S. CALVERT FORD,  
Inspector of Gas and Meters.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.

*Report of the illuminating power and purity of the gas supplied by the Washington Gaslight Company from June 24, 1897, to June 23, 1898.*

CENTRAL LABORATORY.

| Month.          | Number of observations. | Illuminating power in sperm candles. |          |         | Quantity of ammonia in 100 cubic feet. |                           |                          | Quantity of sulphur in 100 cubic feet. |                           |                          | Number of occasions that sulphureted hydrogen was present during the year. |
|-----------------|-------------------------|--------------------------------------|----------|---------|----------------------------------------|---------------------------|--------------------------|----------------------------------------|---------------------------|--------------------------|----------------------------------------------------------------------------|
|                 |                         | Mean.                                | Highest. | Lowest. | Mean number of grains.                 | Highest number of grains. | Lowest number of grains. | Mean number of grains.                 | Highest number of grains. | Lowest number of grains. |                                                                            |
| July .....      | 25                      | 25.17                                | 26.88    | 24.10   | 0.66                                   | 1.27                      | 0.17                     | 5.35                                   | 6.96                      | 2.74                     | 7                                                                          |
| August .....    | 26                      | 25.05                                | 26.03    | 23.82   | .70                                    | 1.02                      | .39                      | 6.32                                   | 7.78                      | 4.43                     | .....                                                                      |
| September ..... | 26                      | 25.65                                | 27.39    | 24.21   | .52                                    | .68                       | .28                      | 6.23                                   | 8.19                      | 4.57                     | .....                                                                      |
| October .....   | 26                      | 27.00                                | 28.80    | 25.24   | .37                                    | .68                       | .17                      | 5.26                                   | 7.60                      | 3.20                     | .....                                                                      |
| November .....  | 26                      | 25.44                                | 27.05    | 23.64   | .55                                    | 1.13                      | .22                      | 4.93                                   | 5.63                      | 3.67                     | .....                                                                      |
| December .....  | 24                      | 25.10                                | 26.37    | 23.44   | .20                                    | .29                       | .11                      | 6.97                                   | 9.27                      | 3.70                     | .....                                                                      |
| January .....   | 22                      | 24.97                                | 27.06    | 21.46   | .70                                    | 2.74                      | .17                      | 5.90                                   | 7.85                      | 4.67                     | .....                                                                      |
| February .....  | 25                      | 26.53                                | 26.91    | 22.95   | .25                                    | .45                       | .11                      | 7.17                                   | 9.70                      | 5.35                     | .....                                                                      |
| March .....     | 18                      | 25.07                                | 26.08    | 24.08   | .33                                    | .85                       | .17                      | 7.09                                   | 7.83                      | 4.85                     | .....                                                                      |
| April .....     | 27                      | 24.98                                | 26.35    | 24.13   | .29                                    | .85                       | .17                      | 7.77                                   | 9.08                      | 7.05                     | .....                                                                      |
| May .....       | 25                      | 24.80                                | 28.41    | 21.92   | .35                                    | .56                       | .22                      | 8.26                                   | 12.31                     | 6.77                     | .....                                                                      |
| June .....      | 26                      | 25.67                                | 23.13    | 23.77   | 1.23                                   | 2.09                      | .45                      | 8.33                                   | 10.16                     | 7.60                     | .....                                                                      |
| Total.          | 296                     | 305.43                               | .....    | .....   | 6.16                                   | .....                     | .....                    | 79.58                                  | .....                     | .....                    | 7                                                                          |

AVERAGE FOR THE YEAR.

|                                                                     |       |
|---------------------------------------------------------------------|-------|
| Illuminating power in sperm candles:                                |       |
| Mean of observations <sup>a</sup> .....                             | 25.45 |
| Highest .....                                                       | 28.80 |
| Lowest .....                                                        | 21.46 |
| Quantity of ammonia in 100 cubic feet:                              |       |
| Mean number of grains .....                                         | .61   |
| Highest number of grain .....                                       | 2.74  |
| Lowest number of grains .....                                       | .11   |
| Quantity of sulphur in 100 cubic feet:                              |       |
| Mean number of grains .....                                         | 6.63  |
| Highest number of grains .....                                      | 12.31 |
| Lowest number of grains .....                                       | 2.74  |
| Sulphureted hydrogen, number of times present during the year ..... | 7     |

<sup>a</sup> Each observation consists of ten readings on the Bunsen photometer at intervals of one minute.

On three occasions during the year the average illuminating power of the gas supplied by the Washington Gaslight Company was reported as less than 25 candles, namely, January 4, 1898, 24.97; January 20, 24.72; April 27, 23.37. On April 28 the illuminating power was 24.99 candles. As this was only one point less than the required standard, notice of default was not served on the company. On seven occasions the presence of sulphureted hydrogen was found at this laboratory during month of July, 1897.

*Report of the illuminating power and purity of the gas supplied by the Washington Gaslight Company from June 24, 1897, to June 23, 1898.*

## NORTHWEST LABORATORY.

| Month.         | Number of observations. | Illuminating power in sperm candles. |          |         | Number of occasions that sulphureted hydrogen was present during the year. |
|----------------|-------------------------|--------------------------------------|----------|---------|----------------------------------------------------------------------------|
|                |                         | Mean.                                | Highest. | Lowest. |                                                                            |
| July.....      | 25                      | 25.72                                | 27.17    | 23.90   | .....                                                                      |
| August.....    | 26                      | 26.22                                | 28.68    | 24.82   | ..... 2                                                                    |
| September..... | 26                      | 25.26                                | 27.98    | 22.66   | .....                                                                      |
| October.....   | 25                      | 25.45                                | 29.27    | 23.80   | ..... 1                                                                    |
| November.....  | 26                      | 25.68                                | 27.93    | 22.63   | ..... 22                                                                   |
| December.....  | 24                      | 25.72                                | 28.62    | 24.01   | ..... 14                                                                   |
| January.....   | 22                      | 25.58                                | 27.96    | 22.38   | ..... 8                                                                    |
| February.....  | 25                      | 26.40                                | 28.20    | 23.28   | .....                                                                      |
| March.....     | 18                      | 26.02                                | 27.89    | 24.39   | .....                                                                      |
| April.....     | 27                      | 25.56                                | 27.18    | 23.42   | .....                                                                      |
| May.....       | 25                      | 25.81                                | 28.42    | 23.46   | .....                                                                      |
| June.....      | 26                      | 26.21                                | 27.78    | 24.93   | .....                                                                      |
| Total.....     | 295                     | 309.63                               | .....    | .....   | 47                                                                         |

## AVERAGE FOR THE YEAR.

|                                                                    |       |
|--------------------------------------------------------------------|-------|
| Illuminating power in sperm candles:                               |       |
| Mean of observations <i>a</i> .....                                | 25.80 |
| Highest.....                                                       | 29.27 |
| Lowest.....                                                        | 22.38 |
| Sulphureted hydrogen, number of times present during the year..... | 47    |

On three occasions during the year the average illuminating power of the gas supplied by the Washington Gaslight Company was reported as less than 25 candles, namely, January 4, 1898, 24.97; January 20, 24.72; April 27, 23.37. On April 28 the illuminating power was 24.99 candles. As this was only one point less than the required standard, notice of default was not served on the company. On forty-seven occasions the presence of sulphureted hydrogen was found during the year at this laboratory.

*a* Each observation consists of ten readings on the Bunsen photometer at intervals of one minute.

*Report of the illuminating power and purity of the gas supplied by the Washington Gas-light Company from June 24, 1897, to June 23, 1898.*

SOUTHEAST LABORATORY.

| Month.         | Number of observations. | Illuminating power in sperm candles. |          |         | Quantity of ammonia in 100 cubic feet. |                           |                          | Quantity of sulphur in 100 cubic feet. |                           |                          | Number of occasions that sulphureted hydrogen was present during the year. |
|----------------|-------------------------|--------------------------------------|----------|---------|----------------------------------------|---------------------------|--------------------------|----------------------------------------|---------------------------|--------------------------|----------------------------------------------------------------------------|
|                |                         | Mean.                                | Highest. | Lowest. | Mean number of grains.                 | Highest number of grains. | Lowest number of grains. | Mean number of grains.                 | Highest number of grains. | Lowest number of grains. |                                                                            |
| July .....     | 25                      | 25.21                                | 27.28    | 23.55   | 0.54                                   | 0.85                      | 0.17                     | 3.57                                   | 5.49                      | 1.09                     | 1                                                                          |
| August .....   | 26                      | 25.78                                | 28.70    | 24.72   | .81                                    | 1.19                      | .51                      | 4.01                                   | 5.35                      | 1.51                     | .....                                                                      |
| September ..   | 26                      | 26.27                                | 28.68    | 24.62   | .72                                    | 1.19                      | .34                      | 4.49                                   | 6.04                      | 2.06                     | .....                                                                      |
| October .....  | 24                      | 26.50                                | 28.03    | 24.26   | .80                                    | 1.36                      | .34                      | 3.04                                   | 9.20                      | .89                      | .....                                                                      |
| November ..... | 23                      | 26.01                                | 28.12    | 24.47   | 1.43                                   | 2.89                      | .85                      | 2.65                                   | 3.57                      | 1.23                     | .....                                                                      |
| December ..... | 24                      | 25.52                                | 27.27    | 24.05   | .41                                    | .85                       | .17                      | 3.32                                   | 4.67                      | 1.64                     | .....                                                                      |
| January .....  | 22                      | 26.33                                | 28.91    | 24.94   | .63                                    | 1.02                      | .17                      | 3.04                                   | 4.25                      | 1.00                     | .....                                                                      |
| February ..... | 23                      | 25.17                                | 27.67    | 22.65   | .46                                    | .85                       | .34                      | 6.05                                   | 7.76                      | 2.74                     | .....                                                                      |
| March .....    | 17                      | 25.57                                | 27.50    | 24.58   | .69                                    | 1.50                      | .28                      | 6.88                                   | 8.70                      | 6.18                     | 1                                                                          |
| April .....    | 27                      | 25.49                                | 28.86    | 24.03   | .58                                    | .85                       | .17                      | 7.77                                   | 11.81                     | 6.66                     | .....                                                                      |
| May .....      | 25                      | 26.87                                | 28.64    | 24.81   | .94                                    | 1.53                      | .17                      | 5.41                                   | 8.24                      | 2.19                     | 2                                                                          |
| June .....     | 25                      | 26.21                                | 28.81    | 23.94   | 1.28                                   | 2.21                      | .51                      | 6.52                                   | 8.31                      | 3.98                     | .....                                                                      |
| Total.         | 289                     | 311.02                               | .....    | .....   | 9.79                                   | .....                     | .....                    | 56.75                                  | .....                     | .....                    | 4                                                                          |

AVERAGE FOR THE YEAR.

|                                                                     |       |
|---------------------------------------------------------------------|-------|
| Illuminating power in sperm candles:                                |       |
| Mean of observations <i>a</i> .....                                 | 25.91 |
| Highest .....                                                       | 29.03 |
| Lowest .....                                                        | 22.65 |
| Quantity of ammonia in 100 cubic feet:                              |       |
| Mean number of grains .....                                         | .81   |
| Highest number of grains .....                                      | 2.89  |
| Lowest number of grains .....                                       | .17   |
| Quantity of sulphur in 100 cubic feet:                              |       |
| Mean number of grains .....                                         | 4.72  |
| Highest number of grains .....                                      | 11.81 |
| Lowest number of grains .....                                       | .89   |
| Sulphureted hydrogen, number of times present during the year ..... | 4     |

On three occasions during the year the average illuminating power of the gas supplied by the Washington Gaslight Company was reported as less than 25 candles, namely, January 4, 1898, 24.97; January 20, 24.72; April 27, 23.37. On April 28 the illuminating power was 24.99 candles. As this was only one point less than the required standard, notice of default was not served on the company. On four occasions the presence of sulphureted hydrogen was found in this laboratory during the year.

*a* Each observation consists of ten readings on the Bunsen photometer at intervals of one minute.

*Report of the illuminating power and purity of the gas supplied by the Georgetown Gas Light Company from June 24, 1897, to June 23, 1898.*

## THIRTY-SECOND STREET LABORATORY.

| Month.          | Number of observations. | Illuminating power in sperm candles. |          |         | Quantity of ammonia in 100 cubic feet. |                           |                          | Quantity of sulphur in 100 cubic feet. |                           |                          | Number of occasions that sulphureted hydrogen was present during the year. |
|-----------------|-------------------------|--------------------------------------|----------|---------|----------------------------------------|---------------------------|--------------------------|----------------------------------------|---------------------------|--------------------------|----------------------------------------------------------------------------|
|                 |                         | Mean.                                | Highest. | Lowest. | Mean number of grains.                 | Highest number of grains. | Lowest number of grains. | Mean number of grains.                 | Highest number of grains. | Lowest number of grains. |                                                                            |
| July .....      | 25                      | 27.73                                | 30.26    | 25.10   | 7.78                                   | 15.58                     | 4.53                     | 10.96                                  | 12.96                     | 8.15                     | .....                                                                      |
| August .....    | 26                      | 28.67                                | 32.45    | 25.44   | 4.07                                   | 6.23                      | 2.77                     | 10.41                                  | 11.56                     | 9.38                     | .....                                                                      |
| September ..... | 26                      | 27.77                                | 29.97    | 25.02   | 3.93                                   | 4.86                      | 2.83                     | 10.51                                  | 13.23                     | 9.20                     | .....                                                                      |
| October .....   | 25                      | 27.16                                | 31.09    | 23.65   | 2.70                                   | 3.03                      | 2.26                     | 10.44                                  | 11.64                     | 9.48                     | .....                                                                      |
| November .....  | 26                      | 27.72                                | 30.26    | 25.27   | 2.83                                   | 3.58                      | 2.26                     | 10.46                                  | 12.09                     | 9.02                     | .....                                                                      |
| December .....  | 24                      | 27.02                                | 30.39    | 24.64   | 1.51                                   | 2.16                      | 1.24                     | 12.80                                  | 14.87                     | 11.12                    | 5                                                                          |
| January .....   | 22                      | 27.06                                | 32.38    | 24.71   | 1.60                                   | 1.91                      | 1.26                     | 14.29                                  | 15.17                     | 13.19                    | .....                                                                      |
| February .....  | 25                      | 28.34                                | 31.05    | 24.97   | 1.99                                   | 2.94                      | 1.45                     | 12.07                                  | 13.19                     | 10.54                    | .....                                                                      |
| March .....     | 17                      | 28.01                                | 30.76    | 26.01   | 3.46                                   | 4.76                      | 2.21                     | 12.87                                  | 13.37                     | 11.15                    | .....                                                                      |
| April .....     | 27                      | 28.03                                | 31.30    | 25.33   | 3.75                                   | 5.20                      | 2.84                     | 14.56                                  | 16.39                     | 12.82                    | .....                                                                      |
| May .....       | 25                      | 27.68                                | 31.54    | 25.24   | 3.05                                   | 4.30                      | 2.49                     | 13.75                                  | 15.64                     | 11.44                    | .....                                                                      |
| June .....      | 26                      | 28.21                                | 32.95    | 25.40   | 3.00                                   | 3.85                      | 2.15                     | 13.69                                  | 15.89                     | 11.81                    | .....                                                                      |
| Total.          | 294                     | .....                                | .....    | .....   | .....                                  | .....                     | .....                    | .....                                  | .....                     | .....                    | 5                                                                          |

## AVERAGE FOR THE YEAR.

|                                                                 |       |
|-----------------------------------------------------------------|-------|
| Illuminating power in sperm candles:                            |       |
| Mean of observation $\alpha$ .....                              | 27.78 |
| Highest .....                                                   | 32.95 |
| Lowest .....                                                    | 23.65 |
| Quantity of ammonia in 100 cubic feet:                          |       |
| Mean number of grains .....                                     | 3.30  |
| Highest number of grains .....                                  | 15.58 |
| Lowest number of grains .....                                   | 1.24  |
| Quantity of sulphur in 100 cubic feet:                          |       |
| Mean number of grains .....                                     | 12.23 |
| Highest number of grains .....                                  | 16.39 |
| Lowest number of grains .....                                   | 8.15  |
| Sulphureted hydrogen, number of times present during year ..... | 5     |

On seven occasions the illuminating power of the gas supplied by the Georgetown Gas Light Company was found to be less than 25 candles, namely, September 25, 1897, 24.04; October 1, 24.16; October 23, 23.65; December 14, 24.64; December 29, 24.71; January 21, 1898, 24.90, and February 2, 24.97. On eighteen occasions the quantity of ammonia found exceeded the 5 grains allowed. On five occasions the presence of sulphureted hydrogen was found at this laboratory during the month of December, 1897.

*Report showing the pressure of the gas supplied by the Washington Gas Light Company, as registered in the central laboratory, Tenth and D streets NW., from July 1, 1897, to June 30, 1898.*

| Month.          | Mean.          | Maximum.       | Minimum.       |
|-----------------|----------------|----------------|----------------|
|                 | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> |
| July .....      | 1.54           | 1.92           | 1.20           |
| August .....    | 1.56           | 1.95           | 1.22           |
| September ..... | 1.50           | 2.24           | 1.23           |
| October .....   | 1.47           | 1.79           | 1.16           |
| November .....  | 1.55           | 2.02           | 1.21           |
| December .....  | 1.58           | 1.96           | 1.19           |
| January .....   | 1.70           | 2.12           | 1.31           |
| February .....  | 1.68           | 2.13           | 1.21           |
| March .....     | 1.61           | 2.16           | 1.20           |
| April .....     | 1.55           | 2.02           | 1.23           |
| May .....       | 1.50           | 1.99           | 1.12           |
| June .....      | 1.50           | 1.94           | .....          |
| Average .....   | 1.56           | 2.02           | 1.20           |

$\alpha$  Each observation consists of ten readings on the Bunsen photometer, at intervals of one minute.

# OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 185

*Report showing the pressure of the gas supplied by the Washington Gas Light Company, as registered in the southeast laboratory, Fifth and D streets SE., from July 1, 1897, to June 30, 1898.*

| Month.          | Mean.          | Maximum.       | Minimum.       |
|-----------------|----------------|----------------|----------------|
|                 | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> |
| July .....      | 1.89           | 2.19           | 1.64           |
| August .....    | 1.86           | 2.26           | 1.64           |
| September ..... | 1.85           | 2.60           | 1.64           |
| October .....   | 1.94           | 2.59           | 1.62           |
| November .....  | 2.14           | 2.68           | 1.64           |
| December .....  | 2.17           | 2.79           | 1.68           |
| January .....   | 2.17           | 2.81           | 1.59           |
| February .....  | 2.15           | 2.81           | 1.63           |
| March .....     | 2.16           | 2.88           | 1.54           |
| April .....     | 2.19           | 2.82           | 1.59           |
| May .....       | 2.09           | 2.75           | 1.29           |
| June .....      | 2.01           | 2.79           | 1.59           |
| Average .....   | 2.06           | 2.66           | 1.58           |

*Report showing the pressure of the gas supplied by the Washington Gas Light Company, as registered in the northwest laboratory, 1335 Fourteenth street NW., from July 1, 1897, to June 30, 1898.*

| Month.          | Mean.          | Maximum.       | Minimum.       |
|-----------------|----------------|----------------|----------------|
|                 | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> |
| July .....      | 1.79           | 2.26           | 1.39           |
| August .....    | 1.82           | 2.18           | 1.48           |
| September ..... | 1.79           | 2.52           | 1.48           |
| October .....   | 1.69           | 2.03           | 1.35           |
| November .....  | 1.83           | 2.53           | 1.43           |
| December .....  | 1.84           | 2.37           | 1.48           |
| January .....   | 1.82           | 2.37           | 1.40           |
| February .....  | 1.77           | 2.18           | 1.35           |
| March .....     | 1.70           | 2.28           | 1.29           |
| April .....     | 1.74           | 2.20           | 1.43           |
| May .....       | 1.71           | 2.23           | 1.40           |
| June .....      | 1.75           | 2.20           | 1.38           |
| Average .....   | 1.77           | 2.27           | 1.40           |

*Report showing the pressure of the gas supplied by the Georgetown Gas Light Company, as registered at 1338 Thirty-second street, Georgetown, from July 1, 1897, to June 30, 1898.*

| Month.          | Mean.          | Maximum.       | Minimum.       |
|-----------------|----------------|----------------|----------------|
|                 | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> |
| July .....      | 2.45           | 3.35           | 1.31           |
| August .....    | 2.10           | 3.37           | 1.53           |
| September ..... | 2.12           | 3.25           | 1.62           |
| October .....   | 1.83           | 2.50           | 1.43           |
| November .....  | 1.85           | 2.60           | 1.29           |
| December .....  | 1.88           | 2.83           | 1.20           |
| January .....   | 1.97           | 3.19           | 1.32           |
| February .....  | 1.97           | 3.19           | 1.29           |
| March .....     | 1.96           | 3.59           | 1.38           |
| April .....     | 1.94           | 2.91           | 1.32           |
| May .....       | 1.93           | 2.95           | 1.22           |
| June .....      | 2.17           | 4.02           | 1.13           |
| Average .....   | 2.01           | 3.14           | 1.33           |

# 186 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Report of meters inspected and proved for the Georgetown Gaslight Company and for consumers of gas in Georgetown, from June 24, 1897, to June 23, 1898.*

| Month.          | Meters tested. | New meters for company. |          | Repaired meters for company. |          | Consumers' meters on complaint of consumers. |       |        |       |        |          |        | Consumers' meters on complaint of company. |        |       |        |          |   |  |
|-----------------|----------------|-------------------------|----------|------------------------------|----------|----------------------------------------------|-------|--------|-------|--------|----------|--------|--------------------------------------------|--------|-------|--------|----------|---|--|
|                 |                | Total.                  | Correct. | Total.                       | Correct. | Total.                                       | Fast. |        | Slow. |        | Correct. | Total. | Fast.                                      |        | Slow. |        | Correct. |   |  |
|                 |                |                         |          |                              |          |                                              | No.   | P. ct. | No.   | P. ct. |          |        | No.                                        | P. ct. | No.   | P. ct. |          |   |  |
| July .....      | 2              |                         |          |                              |          | 2                                            |       |        |       |        |          | 2      |                                            |        |       |        |          |   |  |
| August .....    | 14             |                         |          | 9                            | 9        | 1                                            | 1     | 4.83   |       |        |          | 4      | 2                                          | 5.08   | 1     | 6.50   |          | 1 |  |
| September ..... | 19             | 18                      | 18       |                              |          | 1                                            |       |        |       |        | 1        |        |                                            |        |       |        |          |   |  |
| October .....   | 17             | 12                      | 12       |                              |          | 4                                            | 1     | 5.00   | 1     | 7.33   | 2        | 1      |                                            |        |       |        |          | 1 |  |
| November .....  | 26             | 24                      | 24       |                              |          | 2                                            |       |        |       |        | 2        |        |                                            |        |       |        |          |   |  |
| December .....  | 12             |                         |          | 10                           | 10       | 2                                            | 2     | 5.11   |       |        |          |        |                                            |        |       |        |          |   |  |
| January .....   | 7              |                         |          | 1                            | 1        | 6                                            | 2     | 3.99   |       |        | 4        |        |                                            |        |       |        |          |   |  |
| February .....  | 32             | 24                      | 24       |                              |          | 8                                            | 4     | 4.45   |       |        | 4        |        |                                            |        |       |        |          |   |  |
| March .....     | 10             |                         |          |                              |          | 7                                            |       |        |       |        | 7        | 3      | 2                                          | 4.83   |       |        |          | 1 |  |
| April .....     |                |                         |          |                              |          |                                              |       |        |       |        |          |        |                                            |        |       |        |          |   |  |
| May .....       | 3              |                         |          |                              |          | 3                                            | 2     | 6.83   |       |        | 1        |        |                                            |        |       |        |          |   |  |
| June .....      | 1              | 1                       | 1        |                              |          |                                              |       |        |       |        |          |        |                                            |        |       |        |          |   |  |
| Total .....     | 143            | 79                      | 79       | 20                           | 20       | 36                                           | 12    | 5.03   | 1     | 7.33   | 23       | 8      | 4                                          | 4.95   | 1     | 6.50   |          | 3 |  |

One hundred and forty-three meters were inspected and proved by this office for the Georgetown Gaslight Company and for consumers of gas in Georgetown during the year ending June 23, 1898. Of this number 16 registered fast—average error 4.99 per cent; two registered slow—average error 6.91 per cent; 125 registered within the limits allowed by law, namely, 2 per cent either way.

*Report of meters inspected and proved for the Washington Gaslight Company and for consumers of gas in Washington from June 24, 1897, to June 23, 1898.*

| Month.         | Meters tested. | New meters for company. |       |        |       |        | Repaired meters for company. |        |       |        |       |        |           |
|----------------|----------------|-------------------------|-------|--------|-------|--------|------------------------------|--------|-------|--------|-------|--------|-----------|
|                |                | Total.                  | Fast. |        | Slow. |        | Cor-rect.                    | Total. | Fast. |        | Slow. |        | Cor-rect. |
|                |                |                         | No.   | P. ct. | No.   | P. ct. |                              |        | No.   | P. ct. | No.   | P. ct. |           |
| July.....      | 197            |                         |       |        |       |        |                              | 138    |       |        |       |        | 138       |
| August.....    | 200            |                         |       |        |       |        |                              | 119    | 1     | 4.33   |       |        | 118       |
| September..... | 204            |                         |       |        |       |        |                              | 141    |       |        |       |        | 141       |
| October.....   | 245            | 75                      |       |        |       | 75     |                              | 100    |       |        |       |        | 100       |
| November.....  | 425            | 218                     |       |        |       | 218    |                              | 147    |       |        |       |        | 147       |
| December.....  | 332            | 90                      | 1     | 5.00   |       | 89     |                              | 134    |       |        |       |        | 114       |
| January.....   | 356            | 78                      |       |        |       | 78     |                              | 134    |       |        |       |        | 134       |
| February.....  | 316            | 4                       |       |        |       | 4      |                              | 165    |       |        |       |        | 165       |
| March.....     | 291            | 96                      |       |        |       | 96     |                              | 124    |       |        |       |        | 124       |
| April.....     | 202            | 1                       |       |        |       | 1      |                              | 128    |       |        |       |        | 128       |
| May.....       | 148            |                         |       |        |       |        |                              | 108    |       |        |       |        | 108       |
| June.....      | 179            | 25                      |       |        | 1     | 16.66  | 24                           | 108    |       |        |       |        | 108       |
| Total.....     | 3,095          | 587                     | 1     | 5.00   | 1     | 16.66  | 585                          | 1,526  | 1     | 4.33   |       |        | 1,525     |

| Month.         | Consumers' meters on complaint of consumers. |       |        |       | Consumers' meters on complaint of company. |       |        |       | Consumers' meters on complaint of company that did not register. |
|----------------|----------------------------------------------|-------|--------|-------|--------------------------------------------|-------|--------|-------|------------------------------------------------------------------|
|                | Total.                                       | Fast. |        | Slow. | Total.                                     | Fast. |        | Slow. |                                                                  |
|                |                                              | No.   | P. ct. | No.   |                                            | No.   | P. ct. | No.   |                                                                  |
| July.....      | 18                                           | 7     | 4.01   | 1     | 10                                         | 41    |        | 34    | 1                                                                |
| August.....    | 14                                           | 3     | 3.55   |       | 11                                         | 67    |        | 57    | 6                                                                |
| September..... | 17                                           | 9     | 4.33   | 2     | 6                                          | 46    | 1      | 8.66  | 9                                                                |
| October.....   | 25                                           | 8     | 5.68   | 1     | 16                                         | 45    |        | 37    | 7                                                                |
| November.....  | 26                                           | 9     | 4.44   | 2     | 15                                         | 34    |        | 28    | 2                                                                |
| December.....  | 51                                           | 17    | 5.13   | 6     | 28                                         | 77    |        | 45    | 8                                                                |
| January.....   | 47                                           | 21    | 5.01   | 3     | 23                                         | 97    |        | 77    | 18                                                               |
| February.....  | 86                                           | 45    | 5.05   | 6     | 35                                         | 61    | 5      | 5.03  | 11                                                               |
| March.....     | 21                                           | 7     | 4.75   | 1     | 13                                         | 50    | 4      | 4.08  | 14                                                               |
| April.....     | 29                                           | 12    | 4.94   | 5     | 12                                         | 44    |        | 38    | 6                                                                |
| May.....       | 12                                           | 3     | 5.66   | 2     | 3                                          | 28    |        | 21    | 6                                                                |
| June.....      | 22                                           | 8     | 4.38   | 5     | 14                                         | 24    |        | 20    | 4                                                                |
| Total.....     | 368                                          | 144   | 4.74   | 34    | 190                                        | 614   | 10     | 4.25  | 120                                                              |

• Average.

Three thousand and ninety-five meters were inspected and proved by this office for the Washington Gaslight Company and consumers of gas in Washington during the year ending June 23, 1898. Of this number 156 registered fast—average error 4.58 per cent; 504 registered slow—average error 18.03 per cent; 2,315 registered within the limits allowed by law, namely, 2 per cent either way; 120 did not register the gas flowing through them.

Three meters were inspected for the Alexandria Gas Works.

# REPORT OF THE INSPECTOR OF BUILDINGS.

WASHINGTON, D. C., August 8, 1898.

SIR: I have the honor to submit herewith the annual report covering the transactions of the building department for the fiscal year ending June 30, 1898, together with recommendations for the fiscal year ending June 30, 1900.

## Statement of permits issued from June 30, 1897, to July 1, 1898.

| Description.                    | Number. | Value.            |
|---------------------------------|---------|-------------------|
| Brick dwellings.....            | 573     | \$2, 020, 800. 00 |
| Frame dwellings.....            | 126     | 180, 150. 00      |
| Brick repairs.....              | 646     | 746, 071. 00      |
| Frame repairs.....              | 504     | 75, 748. 00       |
| Stores (brick).....             | 25      | 111, 775. 00      |
| Stores (frame).....             | 1       | 150. 00           |
| Stables (brick).....            | 46      | 53, 890. 00       |
| Stables (frame).....            | 8       | 1, 415. 00        |
| Warehouses.....                 | 6       | 22, 900. 00       |
| Churches.....                   | 3       | 179, 000. 00      |
| Office buildings.....           | 10      | 88, 300. 00       |
| Workshops, etc.....             | 9       | 11, 100. 00       |
| Flats and apartment houses..... | 27      | 339, 200. 00      |
| Greenhouses, etc.....           | 10      | 3, 510. 00        |
| Grand stand.....                | 1       | 2, 500. 00        |
| Power house.....                | 2       | 146, 200. 00      |
| Hospital.....                   | 1       | 20, 000. 00       |
| Ice house.....                  | 1       | 4, 000. 00        |
| Museum.....                     | 1       | 24, 000. 00       |
| Gas holder.....                 | 1       | 70, 000. 00       |
| Wood and coal yard.....         | 1       | 750. 00           |
| Sheds.....                      | 214     | 11, 495. 00       |
| Boilers and engines.....        | 42      | 40, 505. 00       |
| Minor repairs.....              | 2, 258  | 4, 153, 459. 00   |
| Awnings.....                    | 1, 818  | 14, 544. 00       |
| Elevators and fire escapes..... | 142     | 12, 750. 00       |
| Vaults.....                     | 9       | 22, 100. 00       |
| Total.....                      | 4, 227  | 4, 203, 620. 57   |

Special applications for projections beyond the building line approved..... 509

## Comparative statement of building operations for the years 1897 and 1898.

| Year.         | New buildings. | Repairs. | Dwellings. |
|---------------|----------------|----------|------------|
| 1897.....     | 1, 098         | 921      | 732        |
| 1898.....     | 1, 117         | 1, 150   | 699        |
| Increase..... | 19             | 229      | 33         |

a Decrease.

|                                   |                   |
|-----------------------------------|-------------------|
| Valuation of building operations: |                   |
| 1897.....                         | \$4, 102, 593. 75 |
| 1898.....                         | 4, 203, 620. 57   |
| Increase.....                     | 101, 021. 82      |

|                           |        |
|---------------------------|--------|
| Number of permits issued: |        |
| 1897.....                 | 1, 622 |
| 1898.....                 | 1, 869 |
| Increase.....             | 247    |



The following summary will show the distribution of improvements in the different sections of the District and the value of same:

|                           |               |                         |            |
|---------------------------|---------------|-------------------------|------------|
| Northwest buildings.....  | \$1, 319, 925 | Northwest repairs ..... | \$629, 462 |
| County buildings.....     | 1, 256, 620   | Southwest repairs ..... | 52, 055    |
| Northeast buildings ..... | 364, 620      | County repairs .....    | 48, 377    |
| Southeast buildings ..... | 269, 020      | Northeast repairs ..... | 47, 833    |
| Southwest buildings.....  | 121, 455      | Southeast repairs.....  | 44, 092    |
| Total.....                | 3, 331, 640   | Total.....              | 821, 819   |

The following were the receipts of the office for the year:

|                                              |              |
|----------------------------------------------|--------------|
| For building permits.....                    | \$3, 127. 00 |
| For vaults or underground construction ..... | 767. 57      |
| For awnings.....                             | 142. 00      |
| For boilers, engines, ovens, etc .....       | 52. 00       |
| Total.....                                   | 4, 088. 57   |
| Received for year 1897 .....                 | 5, 580. 77   |
| Received for year 1898 .....                 | 4, 088. 57   |
| Decrease .....                               | 1, 492. 20   |

In addition to the permits above enumerated, miscellaneous permits were issued, for which no fees were obtained, consisting of rebuilding entrance porches and steps, temporary structures for the use of builders in connection with new construction, extra occupancy of public space for building materials, and excavations for buildings.

The corps of assistant inspectors have been faithful and painstaking in the discharge of the duties assigned them, and I append a statement of the execution of the miscellaneous character of their assignments.

SIR: I have the honor to submit the following as a list of inspections made by me during the fiscal year ending June 30, 1898:

|                                                               |        |
|---------------------------------------------------------------|--------|
| Elevators .....                                               | 967    |
| Elevators inspected and condemned for repairs .....           | 66     |
| Premises examined to locate steam boiler and engine.....      | 69     |
| Premises examined to locate bake ovens .....                  | 17     |
| Premises examined to locate gas engines .....                 | 19     |
| Premises examined to locate gasoline engines .....            | 4      |
| Inspections for the United States .....                       | 7      |
| Miscellaneous inspections .....                               | 220    |
| Premises examined to locate fire escapes .....                | 68     |
| Fire escapes examined and condemned during construction ..... | 3      |
| Premises examined to locate electric motor .....              | 3      |
| Total .....                                                   | 2, 317 |

I have the honor to submit herewith the following amendment to the fire-escape law:

After the word asylum, in line 9, section 1, strike out the words "owning or using any building 50 feet high or upward," and insert "office building, mercantile building, or any building at the discretion of the inspector of buildings and chief engineer of the fire department." The section to read as follows:

That it shall be the duty of the owner or owners in fee or for life of every building constructed or used or intended to be used as a hotel, factory, manufactory, theater, tenement house, apartment house, seminary, college, academy, hospital, asylum, hall, place of amusement, office building, mercantile building, or any building at the discretion of the inspector of buildings and chief engineer fire department, and the trustee or trustees of every estate, association, society, college, academy, school, hospital, asylum, owning or using any building for any of the purposes herein above mentioned, to provide and cause to be erected and affixed to said buildings iron fire escapes and combined standpipes and ladders, or either of said appliances, as may be approved and adopted by the Commissioners of the District of Columbia.

Thanking you for your past kindness and uniform support on all occasions, I have the honor to remain,

Very respectfully,

E. F. VERMILLION,  
Assistant Inspector of Buildings.

SIR: We, the undersigned assistant inspectors, respectfully submit the following statement of the amount and character of the work done in connection with the building operations of the District of Columbia during the fiscal year ending June 30, 1898:

|                                                                                  |                |
|----------------------------------------------------------------------------------|----------------|
| Inspections of new buildings in city and county.....                             | 6, 238         |
| Inspections of old frame buildings and sheds examined for repair.....            | 1, 172         |
| Inspections of old buildings reported as dangerous.....                          | 27             |
| Inspections of old brick buildings examined for repair.....                      | 1, 689         |
| Inspections and notices sent to make good defective construction.....            | 105            |
| Inspections and notices sent for condemnation of party walls.....                | 18             |
| Inspections and notices sent for condemnation of brick buildings.....            | 22             |
| Inspections and notices sent for condemnation of frame buildings.....            | 59             |
| Inspections and notices sent for condemnation of defective chimneys.....         | 14             |
| Notices sent for removal of obstructions from streets, alleys, parkings, etc.... | 33             |
| Notices sent to vacate dangerous buildings.....                                  | 9              |
| Notices sent correcting numbers on old buildings.....                            | 253            |
| Orders and notices sent correcting violations of building regulations.....       | 66             |
| Orders and notices to make repairs to defective downspouts and gutters.....      | 83             |
| Orders to remove horses, etc., from frame sheds converted to stables.....        | 31             |
| Miscellaneous inspections not enumerated above.....                              | 501            |
| <b>Total .....</b>                                                               | <b>10, 320</b> |

Attention is called to the above detailed statement of the character and large amount of work performed by your assistants, it being greatly in excess of any preceding year in the history of this office.

The increased efficiency is due to the fact that the inspectors have been equipped with bicycles, which enabled them to cover a greater amount of territory than could be covered on foot, and the better organization of the staff, which brought better results and made them more efficient in the discharge of their duties.

Attention is particularly called to the large number of visits made other than those that apply to the direct inspection of new work and repairs to old buildings, and shows the varied character of work the assistant building inspectors are called upon to perform, and which entails upon them a large amount of clerical duty.

In our opinion the force of the office should be increased, to enable the department to give the field work the attention it should receive and which the public demand.

We are very often required to work early and late in order that the conditions will be fully complied with.

Thanking you very kindly for your uniform kindness and support which we have on all occasions received from you, we have the honor to remain,

Very respectfully,

R. M. EVANS,  
C. W. SOMMERVILLE,  
R. E. CRUMP,

*Assistant Inspectors of Buildings.*

Your attention is invited to the tabulated statement of the building operations of the year, which present, for the first time since 1893, the gratifying feature of an increase, both in the number of buildings and valuation. The number of buildings is 19 greater than last year, and the valuation \$101,021.82. The number of dwellings erected is 33 less than the previous year, but there were 21 more apartment houses constructed than during the last fiscal year.

The statements of the assistants show that more frequent inspections of buildings were rendered last year, owing to the fact that bicycles were provided, which enabled them to cover more territory than formerly. As the volume of business that this office is called upon to perform increases each year, I renew my request that the force of assistant inspectors be increased, and recommend that provision be made for three more men.

It is generally admitted that the physical equipment of the building department has never been sufficient to give that prompt attention to the dispatch of the great amount of work this office is called upon to execute.

I also renew my recommendation of last year that an additional clerk, at \$1,200 per annum, be provided for. This employee is an absolute necessity for the proper administration of this office, as the great amount of work rendered by the clerk temporarily employed during the year to assist me has been of great service and should be made permanent.

I again recommend that the salaries of the assistant inspectors be made \$1,200 per annum, as I am satisfied that the compensation now given is inadequate for the services rendered; and for the same reason the salary of the principal assistant inspector should be made at least \$1,800.

# 190 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

## DISTRICT BUILDINGS.

The plans and specifications were prepared under the supervision of the inspector of buildings for the several municipal buildings provided for in the appropriation bill, and in the erection of which the expenditures made are shown by the following detailed accounts:

### ANTHONY BOWEN SCHOOL.

|                                                   |                  |                  |
|---------------------------------------------------|------------------|------------------|
| Appropriation .....                               |                  | \$30,000.00      |
| Site (additional ground).....                     | \$2,616.25       |                  |
| Contract No. 2381.....                            | 21,927.00        |                  |
| Contract, heating and ventilating, No. 2382.....  | 2,400.00         |                  |
| Draftsman .....                                   | 256.00           |                  |
| Tracer.....                                       | 9.00             |                  |
| Condemnation of lot.....                          | 60.00            |                  |
| Specifications .....                              | 24.54            |                  |
| Superintendence .....                             | 644.00           |                  |
| Drawing material.....                             | 2.67             |                  |
| Blackboarding and material.....                   | 50.30            |                  |
| Grading yard and building retaining wall.....     | 533.00           |                  |
| Cement and sacks.....                             | 12.84            |                  |
| Putting up bell.....                              | 13.50            |                  |
| Wire guards.....                                  | 21.35            |                  |
| Repairing bell.....                               | 4.25             |                  |
| Iron fence.....                                   | 305.62           |                  |
| Painting fence.....                               | 11.00            |                  |
| Extra work by contractor.....                     | 875.00           |                  |
|                                                   | <u>29,766.32</u> |                  |
| Less for cement sacks returned by contractor..... | 20.44            |                  |
|                                                   |                  | <u>29,745.88</u> |
| Balance.....                                      |                  | 254.12           |

### FOR LOT ADJOINING CURTIS SCHOOL.

|                                                           |            |                 |
|-----------------------------------------------------------|------------|-----------------|
| Appropriation .....                                       |            | \$5,000.00      |
| Site .....                                                | \$4,256.00 |                 |
| Removing fence, grading lot, and building wall fence..... | 702.00     |                 |
| Picket fence on building line.....                        | 15.00      |                 |
|                                                           |            | <u>4,973.00</u> |
| Balance .....                                             |            | 27.00           |

### WESTERN HIGH SCHOOL.

|                                                              |                   |                   |
|--------------------------------------------------------------|-------------------|-------------------|
| Appropriation .....                                          |                   | \$133,000.00      |
| Site .....                                                   | \$30,000.00       |                   |
| Contract for building (No. 2380).....                        | 84,413.00         |                   |
| Heating and ventilation (No. 2391).....                      | 11,993.00         |                   |
| Electric wiring for telephone and clocks.....                | 397.00            |                   |
| Superintendence .....                                        | 1,552.00          |                   |
| Drafting (including plans for heating and ventilating) ..... | 1,080.00          |                   |
| Tracing .....                                                | 15.00             |                   |
| Specifications.....                                          | 77.83             |                   |
| Blue prints .....                                            | 66.48             |                   |
| Skilled labor.....                                           | 282.50            |                   |
| Specifications, heating and ventilating.....                 | 13.83             |                   |
| Extra work.....                                              | 1,245.80          |                   |
|                                                              | <u>131,136.44</u> |                   |
| Deductions for omissions.....                                | \$1,025.37        |                   |
| Forfeiture for overtime .....                                | 610.00            |                   |
| Superintendence for overtime charged contractor.....         | 232.00            |                   |
| Profit on cement.....                                        | 4.35              |                   |
|                                                              | <u>1,871.72</u>   |                   |
|                                                              |                   | <u>129,264.72</u> |
| Balance .....                                                |                   | 3,735.28          |

SCHOOL BUILDING, CONNECTICUT AVENUE EXTENDED.

|                                        |            |                  |
|----------------------------------------|------------|------------------|
| Appropriation .....                    |            | \$16,000.00      |
| Site .....                             | \$6,000.00 |                  |
| Contract for building (No. 2450) ..... | 8,247.00   |                  |
| Drafting .....                         | 68.00      |                  |
| Specifications .....                   | 13.58      |                  |
| Drawing materials .....                | 9.86       |                  |
| Superintendence .....                  | 383.00     |                  |
| Well and pump .....                    | 232.79     |                  |
| Blackboards .....                      | 14.75      |                  |
| Skilled labor .....                    | 12.50      |                  |
| Extra work .....                       | 856.00     |                  |
|                                        |            | <u>15,837.48</u> |
| Balance .....                          |            | 162.52           |

CONGRESS HEIGHTS SCHOOL.

|                                        |            |                  |
|----------------------------------------|------------|------------------|
| Appropriation .....                    |            | \$12,219.76      |
| Contract for building (No. 2359) ..... | \$9,780.00 |                  |
| Heating (No. 2389) .....               | 1,800.00   |                  |
| Superintendence .....                  | 256.00     |                  |
| Skilled labor .....                    | 17.50      |                  |
| Blackboarding .....                    | 42.55      |                  |
| Blue prints .....                      | .90        |                  |
| Extra work .....                       | 71.00      |                  |
|                                        |            | <u>11,967.95</u> |
| Deduction for old tin roof .....       | \$291.24   |                  |
| Work omitted .....                     | 51.67      |                  |
| Superintendence for overtime .....     | 60.00      |                  |
|                                        |            | <u>402.91</u>    |
|                                        |            | 11,565.04        |
| Balance .....                          |            | 654.72           |

NOTE.—The above balance will be expended in painting the exterior of the building and placing clocks in tower.

HAYES SCHOOL, FIFTH AND K STREETS NE.

|                                              |            |                  |
|----------------------------------------------|------------|------------------|
| Appropriation .....                          |            | \$39,000.00      |
| Site .....                                   | \$9,999.45 |                  |
| Contract (No. 2369) .....                    | 24,538.00  |                  |
| Heating and ventilating (No. 2370) .....     | 2,400.00   |                  |
| Draftsman .....                              | 180.00     |                  |
| Tracer .....                                 | 99.00      |                  |
| Drawing material, etc .....                  | 19.69      |                  |
| Specifications .....                         | 21.52      |                  |
| Superintendence .....                        | 923.00     |                  |
| Railing and areas .....                      | 24.00      |                  |
| Blackboarding and material .....             | 43.75      |                  |
| Wirework .....                               | 144.00     |                  |
| Forfeits waived by Commissioners .....       | 740.00     |                  |
| Extra work .....                             | 893.25     |                  |
|                                              |            | <u>40,025.66</u> |
| Forfeits .....                               | \$740.00   |                  |
| Omission to plane off floors .....           | 50.00      |                  |
| Omission of grounds for plastering .....     | 30.00      |                  |
| Profit on cement .....                       | 3.60       |                  |
| Superintendence for overtime allowance ..... | 223.00     |                  |
|                                              |            | <u>1,046.60</u>  |
|                                              |            | 38,979.06        |
| Balance .....                                |            | 20.94            |

FOR COMPLETION OF WALLACH SCHOOL.

|                                                                            |          |            |
|----------------------------------------------------------------------------|----------|------------|
| Appropriation .....                                                        |          | \$2,000.00 |
| Labor and material for painting, plastering, and carpenter work, etc ..... | 1,926.05 |            |
| Balance .....                                                              |          | 73.95      |

# 192 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

## LOVEJOY SCHOOL—MODERN HEATING AND VENTILATING APPARATUS.

|                     |            |
|---------------------|------------|
| Appropriation ..... | \$5,725.24 |
| Draftsman .....     | 16.00      |
| Balance .....       | 5,709.24   |

## INDUSTRIAL HOME SCHOOL—MAINTENANCE, INCLUDING REPAIRS.

|                         |             |
|-------------------------|-------------|
| Appropriation .....     | \$11,000.00 |
| Paving .....            | \$20.00     |
| Addition to stack ..... | 54.00       |
| Balance .....           | 10,926.00   |

NOTE.—Balance of appropriation expended under direction of board of managers of the Industrial Home School.

## TWO ISOLATION HOSPITALS.

|                                         |             |
|-----------------------------------------|-------------|
| Appropriation .....                     | \$30,000.00 |
| Specifications, partially printed ..... | 3.55        |
| Balance .....                           | 29,996.45   |

NOTE.—The plans were prepared for one of these buildings and specifications partially printed when work was suspended by injunction or restraining order of the court.

## WASHINGTON ASYLUM—CENTRAL HEATING STATION, HOSPITAL DEPARTMENT.

|                                                |            |
|------------------------------------------------|------------|
| Appropriation .....                            | \$8,500.00 |
| Contract (No. 2406), steam heating plant ..... | \$7,400.00 |
| Draftsman .....                                | 94.00      |
| Tracer .....                                   | 6.00       |
| Specifications .....                           | 27.08      |
| Superintendence .....                          | 370.00     |
| Coal vault .....                               | 171.36     |
|                                                | 8,068.44   |
| Less superintendence for overtime .....        | 32.00      |
| Balance .....                                  | 8,036.44   |

## SPECIAL REPAIRS TO MARKET HOUSES, 1897, 1898.

|                     |            |
|---------------------|------------|
| Appropriation ..... | \$1,500.00 |
| Western .....       | \$898.69   |
| Eastern .....       | 384.00     |
| Georgetown .....    | 54.15      |
| Balance .....       | 1,336.84   |

## REPAIRS TO MARKET HOUSES, CONTINGENT EXPENSES.

|                                  |          |
|----------------------------------|----------|
| Appropriation .....              | \$600.00 |
| Cleaning water-supply pipe ..... | \$9.00   |
| Cement .....                     | 46.50    |
| Balance .....                    | 544.50   |

## REPAIRS TO POLICE-COURT BUILDING.

|                                                            |          |
|------------------------------------------------------------|----------|
| Appropriation .....                                        | \$700.00 |
| Reconstructing and repairing steam-heating apparatus ..... | \$233.75 |
| Painting .....                                             | 207.00   |
| Carpenter, hardware, etc .....                             | 85.65    |
| Plumbing and gas fitting .....                             | 77.65    |
| New speaking tube .....                                    | 5.50     |
| Balance .....                                              | 609.55   |

Balance .....

# OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 193

## ADDITION TO CELLS AND OTHER IMPROVEMENTS AT POLICE-COURT BUILDING.

|                      |              |
|----------------------|--------------|
| Appropriation .....  | \$1,200.00   |
| Draftsman .....      | \$26.00      |
| Specifications ..... | 10.25        |
|                      | <u>36.25</u> |
| Balance .....        | 1,163.75     |

## FOUR ADDITIONAL CELLS AT FOURTH PRECINCT STATION HOUSE.

|                     |               |
|---------------------|---------------|
| Appropriation ..... | \$996.00      |
| Draftsman .....     | 10.00         |
|                     | <u>986.00</u> |
| Balance .....       | 986.00        |

## REPAIRS TO STATION HOUSES, 1897, 1898.

|                     |                 |
|---------------------|-----------------|
| Appropriation ..... | \$2,000.00      |
| No. 1 .....         | \$513.00        |
| No. 2 .....         | 83.48           |
| No. 3 .....         | 49.30           |
| No. 4 .....         | 323.45          |
| No. 5 .....         | 51.60           |
| No. 6 .....         | 385.09          |
| No. 7 .....         | 42.30           |
| No. 8 .....         | 370.13          |
| No. 9 .....         | 66.60           |
|                     | <u>1,884.95</u> |
| Balance .....       | 115.05          |

## ENGINE HOUSE NO. 14, EIGHTH STREET BETWEEN D AND E STREETS NW.

|                                                   |                  |
|---------------------------------------------------|------------------|
| Appropriation .....                               | \$35,000.00      |
| Amount transferred from No. 12 engine house ..... | 3,797.59         |
|                                                   | <u>38,797.59</u> |

|                                                           |                  |
|-----------------------------------------------------------|------------------|
| Site .....                                                | \$23,475.00      |
| Contract (No. 2526) .....                                 | 10,740.00        |
| Specifications .....                                      | 16.85            |
| One-half thickness of wall .....                          | 295.69           |
| Superintendence .....                                     | 537.00           |
| Skilled labor .....                                       | 75.00            |
| Sewer pipe .....                                          | 45.06            |
| Architect .....                                           | 300.00           |
| Concreting floors in engine room, cellar, and areas ..... | 191.20           |
| Cement for engine room, cellar, and areas .....           | 186.00           |
| Cement furnished contractor for building .....            | 87.42            |
| Driveway .....                                            | 205.93           |
| Curtain ring and shower .....                             | 20.00            |
| Cement floor in storeroom .....                           | 15.44            |
| Mechanical and electrical appliances .....                | 361.00           |
| Constructing partition for storeroom, shelving, etc. .... | 26.08            |
| Lumber for partition for storeroom, shelving, etc. ....   | 11.79            |
| Hardware .....                                            | 2.13             |
| Wire screens .....                                        | 17.36            |
| Bath tub .....                                            | 43.50            |
| Putting up shower .....                                   | 5.80             |
| Extra work .....                                          | 537.59           |
|                                                           | <u>37,195.84</u> |

|                                          |               |
|------------------------------------------|---------------|
| Less cement charged contractor .....     | \$139.50      |
| Less sewer pipe charged contractor ..... | 45.06         |
| Less for change of flooring .....        | 20.00         |
|                                          | <u>204.56</u> |
|                                          | 36,991.28     |
| Balance .....                            | 1,806.31      |

NOTE.—Of the above balance the sum of \$1,000 was allowed for furniture.

## ENGINE HOUSE NO. 15, ANACOSTIA.

|                                                                     |             |           |
|---------------------------------------------------------------------|-------------|-----------|
| Appropriation .....                                                 | \$16,200.00 |           |
| Amount transferred from Brightwood engine house .....               | 1,343.41    |           |
|                                                                     |             | 17,543.41 |
| Site .....                                                          | \$2,500.00  |           |
| Contract (No. 2510) .....                                           | 11,300.00   |           |
| Draftsman .....                                                     | 262.00      |           |
| Drawing material .....                                              | 8.24        |           |
| Specifications .....                                                | 27.35       |           |
| Sliding pole .....                                                  | 43.70       |           |
| Superintendence .....                                               | 400.00      |           |
| Extra work .....                                                    | 18.65       |           |
| Electrical appliances .....                                         | 404.50      |           |
| Paving driveway .....                                               | 125.39      |           |
| Cement floor .....                                                  | 175.67      |           |
| Material for cement floor .....                                     | 93.75       |           |
| Cement furnished contractor .....                                   | 92.36       |           |
|                                                                     | 15,451.61   |           |
| Less cement charged contractor .....                                | 146.63      |           |
|                                                                     |             | 15,304.98 |
| Balance .....                                                       |             | 2,238.43  |
| Chargeable against this balance will be material for driveway ..... |             | 255.65    |
| Laying drain around building .....                                  |             | 119.00    |
| Furniture for building .....                                        |             | 800.00    |
| Total .....                                                         |             | 1,174.65  |

Leaving the sum of \$1,063.78 to be expended for inclosing and paving grounds and additional work to building.

## REPAIRS TO ENGINE HOUSES, 1897-98.

|                      |            |          |
|----------------------|------------|----------|
| Appropriation .....  | \$3,500.00 |          |
| No. 1 .....          | \$966.58   |          |
| No. 2 .....          | 66.25      |          |
| No. 4 .....          | 209.97     |          |
| No. 5 .....          | 42.75      |          |
| No. 6 .....          | 276.35     |          |
| No. 7 .....          | 457.83     |          |
| No. 8 .....          | 141.91     |          |
| No. 9 .....          | 74.80      |          |
| No. 10 .....         | 74.08      |          |
| No. 11 .....         | 64.17      |          |
| No. 12 .....         | 20.69      |          |
| No. 13 .....         | 34.49      |          |
| No. 15 .....         | 2.77       |          |
| Chemical No. 1 ..... | 5.24       |          |
| Chemical No. 2 ..... | 9.00       |          |
| Truck A .....        | 249.28     |          |
| Truck B .....        | 94.53      |          |
| Truck C .....        | 101.59     |          |
| Truck D .....        | 111.95     |          |
|                      |            | 3,004.23 |
| Balance .....        |            | 495.77   |

On May 11, 1898, the Commissioners transferred the supervision of station-house, engine-house, and market-house repairs to Mr. L. E. Bond, superintendent of school repairs.

To relieve this office of the labor of preparing plans for the municipal buildings, advantageous terms were made with four leading architects of this city by the Commissioners, and drawings and specifications were obtained for three schoolhouses and one engine house. The latter is completed and occupied, and it is expected that the schoolhouses will be ready for occupancy in September next. The architectural treatment of the buildings is very satisfactory, and this method of disposing of the architectural work under the supervision of this office will be continued.

In October last the new building regulations went into effect, and their application results in a better and more substantial method of construction than prevailed under the old regulations.

To exercise that supervision over general construction necessary to insure compliance with the regulations the number of assistant inspectors should be increased. The necessity is and has been urgent, and will become more and more so. Therefore I hope that the recommendations made will be approved, and the increased assistance not denied. Manifestly the building inspector has but little opportunity to give his personal attention to this branch of the work. Office work and the supervision of municipal buildings engrosses his whole time, and entire reliance for the proper inspection of general construction must be placed in his assistants.

I reiterate the arguments heretofore used in my former reports, and ask that you present to the law-making power the claims and requirements of this department for that assistance necessary for the proper supervision of general construction.

In conclusion, I beg to extend to you the acknowledgments of my obligations for the uniform kindness and courtesy which you have always manifested toward me.

Very respectfully,

JNO. B. BRADY,  
*Inspector of Buildings.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner, District of Columbia.*

## REPORT OF THE SURVEYOR.

WASHINGTON, July 20, 1898.

SIR: I have the honor to transmit herewith a statement of the transactions of this office during the year ending June 30, 1898.

During that period 576 lots were surveyed for private parties and 576 certificates of surveys issued, which, together with the recording of the same, make a total of 1,142 plats issued and recorded. In all cases of surveys of lots full or partial plats of the square have to be made, showing the original lots and subdivisional parts into which the lots in the square have been divided. This is very essential to the intelligent and correct making of the survey required. Although new plats are not required in each instance, still it would be fair to estimate the number of new plats made at 200, making an aggregate of 1,342 plats.

One hundred and twenty subdivisions were received and recorded, which, together with the preliminary plats in duplicate and the recording, aggregate 360 plats.

Plat of division of the estate of Thomas Brown, deceased, was placed in Book CO 10, by order of the Commissioners, "for reference only."

Plat of outline survey of Mary L. Beall's tract was recorded, by order of the Commissioners.

Surveys of tracts for private parties were made of the following properties, viz: Part of Glenwood Cemetery; Malvina Fletcher's, near Brightwood; part of a tract called "Indolence;" Prospect Hill Cemetery; Baltimore and Potomac Railroad tracts lying south of square 1130; and part of tract called "Cliffbourne."

The following services were performed for the District, per order of the Commissioners:

*Surveys.*—B street, between the dump and Twenty-third street NW.; alley, square 78, rear of 2019 I street NW.; part of lots 5 and 6, square 431; alley, block 7, Washington Heights; north line of Harrison street, Anacostia, from east line of Fredericks subdivision to Minnesota avenue; Division street, "Lincoln;" land lying west of Twenty-eighth street W., and between I and K streets NW.; Kramer street, between Sixteenth and Seventeenth streets NE.; Rosedale street, between Fifteenth and Sixteenth streets NE.; Gale street, between Fifteenth and Sixteenth streets NE.; alley, square 245; alley, square 719, encroachments rear of 111 H street NE.; alley, square 752; line in rear of stable corner of Chappell road and Connecticut avenue; alley, square 630; alley, square 467, rear of 644 F street SW.; lots 21 to 27, square 8, West Eckington; lots 17 to 22, and parts of lots 16 to 23, and parts of alleys, square 830; lots 35 to 40, and part of lot 8, square 44; alley, square 882; alley, square 491, showing encroachments thereon; Pierce street, between Fourteenth and Fifteenth streets NW.; Poplar street, between Twenty-seventh and Twenty-eighth streets NW.; Mill street, between Poplar and Pierce streets NW.; Reservation 201, to locate encroachments thereon; alleys, square 617; to locate nuisance on block 8, Bloomingdale; points at and near Ebbitt House, for United States Attorney, District of Columbia, for use in trial of United States v. Canty; Twentieth street, between Kalorama avenue and Woodley road; Baltimore street, from Columbia road to Twentieth street NW.; Twentieth street, from Baltimore to Cincinnati streets.



*Plats furnished.*—Square 825; Kalorama Heights, blocks 26 and 27; alley, square 374, rear of lots 35 to 38; square 78; square 881; block 3, S. P. Brown subdivision of Mount Pleasant; dedication of part of lot 13, square 691, for alley purposes; square 69, two plats, alleys, etc.; girl's portion, Green's property; Holmead Manor, block 43, three plats; Prospect Hill Cemetery, sketch plat; square 158, showing existing alleys; square 620, three plats of proposed alleys; square 122, two plats, proposed subdivision of lot 2; square 916, two plats, proposed change in alley.

*Plats recorded.*—Dedication of part of "Cliffbourne," for widening Columbia road; dedication of part of Ingleside, for widening Park street between Kenesaw avenue and Grant street NW.; establishing building line of Sixteenth street extended between Kenesaw avenue and Lowell street NW.; West street extended, through Cunningham's land; Arizona avenue, between Canal and New Cut roads; square 69, closing alley and opening Minor street, Newport place; square 412, opening and closing alley; dedication of T street south, and 18 inches east; dedication of land for widening Columbia road in front of blocks 5, 6, and 7, Washington Heights; closing alleys in blocks 137 and 138; and opening streets through blocks 134, 136, 137, and 138, Burleigh, addition to West Washington.

One hundred and eleven reports upon miscellaneous subjects.

The improvements on many of the avenues, streets, and alleys in the District rendered necessary the removal of many of the marks of surveys which were of great value, and in order to preserve their exact location for future reference their positions have been fixed by measurements, so that they can be accurately replaced when the improvements have been finished. To preserve these points required measurements to be made on 111 avenues, streets, and alleys.

The card system has been introduced into this office in a very modest way, and has been found to work very advantageously in the matter of ready and correct reference. Its use thus far has been confined to the personnel of the office, and, in order that the public may be benefited by its advantages over the old system of book indexing, I recommend it to your consideration and ask that a card-system outfit be purchased for the use of this office.

During the year a complete inventory has been made of all the maps, which are of great value, after which they have been indexed and carefully filed away. Three volumes of miscellaneous plats have been carefully examined and indexed.

At least one-third of the time of the personnel of this office is devoted to the public, in giving information respecting the original records and subdivisions of property and other information concerning property interests in the District of Columbia.

I beg to renew the recommendations made in former reports concerning the old records of this office, which are rapidly disintegrating, and which ere long will be past saving, owing to the poor character of the paper on which they are made and their continuous handling since the year 1809, the date which first appears on the records of the subdivisions. The records in some instances have become so badly defaced as to render the writing and figures unintelligible. Every possible precaution has been taken to preserve and save them from injury, but owing to the fact that they are the current books of record and the only ones available for the use of the public, and are in constant use, their condition can not be wondered at. They have been bound so often and the paper cut so close to the writing as not to allow any more to be cut therefrom without wholly obliterating official signatures and seals.

These records are of inestimable value, for the reason that they contain correct information respecting the early history of the District of Columbia, under the municipal governments of Washington and Georgetown, and also the county, which prior to the year 1871 was under the jurisdiction of the levy court and embraced all the territory in the District of Columbia lying without the boundaries of the aforementioned cities. The foundation for all the titles to property in this city is contained in said records, inasmuch as they show the relations existing between the United States and the original proprietors at the time Washington was selected as the temporary and permanent seat of government of the United States, and which, under an engineer and a commission appointed by the President, was platted, surveyed, and laid out into streets, avenues, and squares, the last of which were divided between the United States and the proprietors of the original tracts. The books of record, showing the original divisions and subdivisions of property in this city, now in the custody of the surveyor of the District of Columbia, are the only official ones extant, and their loss would be irreparable to the District of Columbia and the property owners. In order to save the records from further defacement and injury, I suggest that duplicate copies be made of the records not already copied, and the copies already made be verified by careful comparison with the originals, and their correctness certified to by the surveyor or assistant surveyor of the District of Columbia. This would give them legal status, and the originals could then be put in a place of safety and used only in cases of litigation.

To execute the work necessary for copying and comparing copies of said records would require an annual appropriation of \$2,600 until the work is completed. This sum would be required for the employment of a competent draftsman, at \$1,400 per annum, in making copies of the records, and the employment of a clerk, at \$1,200 per annum, to assist in the performance of the work generally, and the verification of the copies.

In a special report made by Mr. Henry B. Looker, the surveyor of the district, on February 2, 1898, to the Engineer Commissioner, he strenuously advocated the fireproofing of one of the office rooms used by him in the next wing of the city hall, so that the records of the surveyor's office might be placed therein at the close of the official day and thus be saved from destruction in case of fire during the absence of the surveyor and his subordinates. The floors of the offices are made of wood and rest on brick arches, but the entire construction of the rooms overhead is of wood and liable to destruction by fire at any time. The building is patrolled by a watchman both day and night, so that while a conflagration might be a remote possibility and might not occur during the occupancy of the rooms by the surveyor, I think it advisable to use every means to preserve and protect the valuable records of this office from destruction or injury by either fire or water. The surveyor gave this matter serious and thoughtful consideration and devised a plan which he submitted to the Engineer Commissioner of the character of the work and the manner in which he wished it done.

I would respectfully call attention to the amount of work required of this office since the surveyor became a salaried officer in comparison with what was done under the fee system. There has been very little increase of force under the recent arrangement, while the work has almost doubled, making it impossible to keep up with the current work and have records in the best shape. In addition to the work for private parties, calls for which are made daily, a large number of surveys are ordered by the Commissioners from time to time in the location of alleys, street lines, and school sites. The law requiring all official surveys to be made by the employees of this office has narrowed down the work formerly done by the outside parties and thrown additional work upon this force. At least one field party, consisting of an assistant surveyor and three aids, should be added, and also one or two assistants for the office work. This would aid in gathering up many loose ends that it is now impossible to attend to and would expedite all field work.

This office for the past year has been under the direction of Mr. Looker, surveyor, and the above recommendations accord with suggestions by him. My connection with this office during that time has been quite close, and I respectfully urge these pressing needs.

The assistants of this office are capable and efficient, and I desire to express appreciation for their interest and aid.

Very respectfully,

WM. P. RICHARDS,  
*Surveyor.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner, District of Columbia.*

## REPORT OF THE SUPERINTENDENT OF PARKING.

WASHINGTON, July 29, 1898.

CAPTAIN: I have the honor to submit the following report of the work performed under the supervision of this office during the fiscal year ended June 30, 1898:

One thousand nine hundred and eighty-three trees, consisting of oriental planes, Norway, sugar, and silver maples, elms, lindens, salisburias, sweet gums, and tulip trees, have been planted on the streets and avenues of the city and District, and four-fifths of the entire planting were of the three first-named varieties.

Notwithstanding the continued prevalence of dry weather, these trees are all in excellent condition.

Nine thousand eight hundred and nineteen seedlings were planted in the District nursery, as follows: Six hundred and twenty-five chestnut oaks, 1,950 pin oaks, 104 willow oaks, 2,858 Norway maples, 2,495 sugar maples, 1,770 oriental planes, and 17 American lindens. There are at least 20,000 tree seedlings in the nursery seed beds ready for planting in nursery rows of the above varieties, and in addition several thousands of red oaks. None of these last named were planted on the streets during the year, they not being large enough for the purpose. This tree has as yet been planted only on four streets in this city, viz: Twelfth and Fourteenth streets west, between B street north and B street south; Fifteenth street SE., between

Pennsylvania avenue and B street, and on Harvard street, Mount Pleasant; here excellent specimens can be found.

The cultivation of all young trees on the streets and in the nursery has been given especial attention, and the conditions surrounding them are favorable for their future welfare.

Two and one-half tons of leather straps were purchased and used on all young trees in their boxes to prevent their coming in contact with the tops of the boxes and being girdled in the time of high winds. Because of the small amount of appropriation no wire was purchased for the purpose of protecting the larger trees from injury by horses eating them, but about 10,000 old wire guards which had become useless from many causes, being rusted out and badly broken, were removed, condemned, and carted to the dump. The work of loosening tight wires and readjusting them has been given the usual attention.

About 700 old trees which had become objectionable from various causes were removed.

The mowing of street parkings and reservations under the control of the Commissioners has been conducted as usual, but because of the dry weather during the latter part of May and the entire month of June the work has been lighter than usual.

Caterpillars appeared on the trees only in small numbers, and were promptly attacked and destroyed at small cost.

The trimming of trees in various parts of the city was given the usual attention, most of this work being done on the older trees, which yearly have considerable dead wood in them, caused probably by their being too close together, and in many cases by the resetting of curbing and laying of cement sidewalks. Brick sidewalks with sand under them absorb the moisture from rains and serve as a mulching for the retention of the same, while cement sidewalks shed it all, and the broken stone and cement base affords no place for their rooting.

When systematic tree planting in this city was begun, bluestone curb was used on the streets, and the trees were planted much closer to the curb than is now being done. Their roots therefore, in many instances, have forced the curb out of line, and when a broader curb is used and the line straightened, many roots are necessarily cut, and in a number of instances trees have been killed outright and in many others so severely injured as to render their removal obligatory. These have to be replaced, and from the fact that none of this work had been anticipated and provided for by an increase in the appropriation, in endeavoring to keep up the lines of trees already established the work of planting on new streets has been falling behind; and this can not be avoided unless appropriations are increased at least 50 per cent or the trees now on the streets are neglected.

## DISTRIBUTION OF WORK.

|                                                                                                                                                                                                                       |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Appropriation for the year ending June 30, 1898.....                                                                                                                                                                  | \$20,000.00      |
| Amount expended under other appropriations.....                                                                                                                                                                       | 668.73           |
| Sums deposited by individuals .....                                                                                                                                                                                   | 97.00            |
| <b>Total available .....</b>                                                                                                                                                                                          | <b>20,765.73</b> |
| Work at office in repairing and sharpening tools, attending to repairs of tree boxes and damages to trees reported by the police department, etc.                                                                     | 638.75           |
| Work at the nursery, general cultivation of stock, preparation of seed beds, sowing of seeds, care and transplanting of seedlings, digging and trimming of trees for street planting, making of tree boxes, etc ..... | 2,073.78         |
| Digging tree holes on streets .....                                                                                                                                                                                   | 4,965.66         |
| Planting trees .....                                                                                                                                                                                                  | 1,471.52         |
| Strapping trees .....                                                                                                                                                                                                 | 673.77           |
| Cultivation of trees on streets.....                                                                                                                                                                                  | 1,724.32         |
| Cutting roots which had disturbed sidewalks, and paving around young trees.....                                                                                                                                       | 1,130.72         |
| Trimming trees .....                                                                                                                                                                                                  | 2,059.73         |
| Removing trees .....                                                                                                                                                                                                  | 1,494.30         |
| Readjusting and removing broken tree wires .....                                                                                                                                                                      | 766.60           |
| Removing caterpillars.....                                                                                                                                                                                            | 223.20           |
| Mowing and care of street parkings .....                                                                                                                                                                              | 583.95           |
| Removing old tree boxes .....                                                                                                                                                                                         | 13.70            |
| Gathering tree seed.....                                                                                                                                                                                              | 26.15            |
| <b>Total .....</b>                                                                                                                                                                                                    | <b>17,846.15</b> |

Materials:

|                                                                                            |              |
|--------------------------------------------------------------------------------------------|--------------|
| Lumber for tree boxes, tree straps, soil, nails, staples, and miscellaneous articles ..... | \$2, 919. 58 |
| Total expended .....                                                                       | 20, 765. 73  |
| Number of trees on the streets as per last report .....                                    | 75, 554      |
| Number removed during the year .....                                                       | 700          |
|                                                                                            | 74, 854      |
| Number planted during the year .....                                                       | 1, 983       |
| Total number now on the streets .....                                                      | 76, 837      |

Four foremen were employed on days suitable for work, at \$3 per diem; total amount, \$2,695.

Very respectfully,

TRUMAN LANHAM,  
Superintendent of Parking.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner, District of Columbia.  
(Through Mr. W. P. Richards, assistant engineer in charge.)

LETTER FROM THE PARKING COMMISSION.

WASHINGTON, July 28, 1898.

CAPTAIN: In addition to the foregoing report of the superintendent of parking, the following suggestions are respectfully submitted by the parking commission:

The money appropriated for the work of street tree planting and for the many operations connected with the proper care of the trees and parkings throughout the city is altogether inadequate. A yearly appropriation of \$10,000 is needed to maintain and extend these improvements as they should be done and fill the reasonable expectations of every one interested in having the city ornamentation developed in this the pioneer and leading city of the world in this respect.

There are many things pressing for immediate recognition. Prominent among these is that of the removal of trees at street corners where they interfere with the proper lighting of the city. The trees are too closely set at these points and prevent the proper distribution of light from the lamps. This has long been a source of annoyance, and would have been remedied if means had been at command.

Equally pressing is the removal of superfluous trees from the parkings in front of dwellings. These served a purpose for shade when the street trees were small; but now they are worse than useless, as they injure the growth of those set at the curb and overshadow the houses, so as to impede light and the circulation of air, so essential around dwelling houses.

Many thousands of trees are exposed to injury and mutilation by horses and other pernicious agents, owing to the absence of wire guards, which are at once the cheapest, neatest, and most effectual protection that has been employed for this purpose. Five thousand dollars' worth of wire could be profitably used on the trees now in need of protection.

In some parts of the city it has become necessary to remove bad trees and substitute better kinds. Especially those that injure the pavements by upheaval from surface roots should be removed. These now entail expense in repairing injured pavements, and the only effectual remedy is the removal of the trees and the planting of others less objectionable in this respect.

Another matter demanding attention is that of increasing the salaries of the superintendent and his assistant. The duties of the superintendent are of an expert character, as well as requiring a notable degree of administrative and executive ability. It would seem only a matter of justice that his remuneration should equal that of others in similar positions. It is therefore hoped that his salary will be placed at \$1,600 per annum. The salary of the assistant superintendent, who also acts as secretary, should be placed at \$1,200 per annum.

We earnestly trust that these suggestions will be duly entertained.

Respectfully,

JAS. E. JOUETT,  
Rear-Admiral, United States Navy.  
WILLIAM SAUNDERS,  
Parking Commission.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.

REPORT OF THE ASSISTANT ENGINEER IN CHARGE OF STREET  
EXTENSIONS.

WASHINGTON, July 30, 1898.

CAPTAIN: I have the honor to submit the following report of work in this department for the fiscal year ended June 30, 1898:

At the beginning of the year section No. 1 (the county between Rock Creek and North Capitol street extended) was the only map of record in the office of the surveyor prepared under the act for the permanent system of highways. Section No. 2 was then before the highway commission for review, section No. 3 was very near completion, and section No. 4 had been covered by a tentative plan.

Section No. 2 (the county between North Capitol street and the Eastern Branch) was first submitted to the highway commission in May, 1897, and after a public hearing the plan was returned to this office for revision. A careful study was made of the question of grade crossings, the object being to devise a plan by which the location of streets would be favored by the topography for viaducts or depressed crossings of the Baltimore and Ohio Railroad. The protests presented at the hearing were also considered, and the revised plan forwarded to the highway commission on March 15, 1898, was approved by it, and then recorded in the office of the surveyor on April 16, 1898.

Section No. 3 (the county west of Rock Creek), after receiving an exhaustive study as to grades and economical location of streets, was reviewed by Mr. Olmsted and was forwarded, with the recommendations offered by him, to the highway commission in November, 1897. On account of the topography of the section a more liberal departure from the right-line system was accepted than in sections 1 and 2. Along Connecticut avenue extended and bordering the Conduit road curved streets and large blocks are features of the plan. The section was approved by the highway commission and recorded in the office of the surveyor on May 27, 1898.

Section No. 4 (the county east of the Anacostia River) has been studied during the year in the same manner as in section 3, with even a more liberal treatment as to general plan and location of streets. Some five or six plans have been prepared on topographical maps enlarged from the Coast Survey sheets to a scale of 1 inch to 200 feet. The best features of these separate plans have been embodied in one plan, which is now ready to be reviewed by Mr. Olmsted, after which it will be completed and sent to the highway commission.

The maps that have been sent to the highway commission have been drawn on sheets 24 by 30 inches, giving details as to lots and blocks, each section covering thirty or forty sheets. These plans have all been prepared in duplicate, one copy being retained in this office.

The preparation of the plans has occasioned a thorough search of the records as to lots and property lines, and a set of maps, drawn to a scale of 100 feet to the inch, are now the property of this office, and cover almost the entire District. They are the most complete maps, as to details, yet made of the county, and it is desired to finish this set during the coming year.

Some work has also been done in fixing grades of subdivisions and of new highways in the sections now of record.

## FUTURE WORK.

An amendment to the highway act, passed by Congress in June of this year, has annulled all of section 1 within subdivisions, and further directs that a revised plan shall be made for that part of the section outside of subdivisions.

The revision of section 1 and the completion of section 4 will cover some six or seven months' work. It is then intended to make a revised and complete study of street grades over all the sections, using the large scale maps of this office and the Coast Survey as a base for this work.

Very respectfully,

WM. P. RICHARDS,  
*Assistant Engineer Street Extension.*

Capt. LANSING H. BEACH,  
*Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.*

REPORT OF THE CHIEF CLERK.

WASHINGTON, July 12, 1898.

CAPTAIN: I have the honor to submit the following report for the fiscal year ending June 30, 1898:

|                                                            | 1898.   | 1897.   |
|------------------------------------------------------------|---------|---------|
| Communications received, briefed, and recorded .....       | 13, 042 | 9, 205  |
| Indorsements, references, and reports thereon .....        | 65, 210 | 46, 025 |
| Letters and orders prepared .....                          | 6, 680  | 5, 972  |
| Copies of contracts drawn .....                            | 556     | 668     |
| Vouchers and bills prepared, recorded, and forwarded ..... | 5, 759  | 5, 069  |

Schedules of bids received during the fiscal year for work and materials under engineer office and statements of contracts for street improvements, sewers, construction material, supplies, and miscellaneous work are herewith.

Very respectfully,

A. Y. LAKENAN,  
Chief Clerk Engineer Department.

Capt. LANSING H. BEACH,  
Corps of Engineers, U. S. A.,  
Engineer Commissioner District of Columbia.

Statement of contracts for the improvement of streets, avenues, and roads for the fiscal year 1898.

| No.  | Date.            | Name and address of contractor.                                     | Location.                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Character of work.             |
|------|------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 2413 | 1897.<br>July 16 | Cranford Paving Co.,<br>Washington, D.C.                            | Columbia road between Florida<br>avenue and Eighteenth street.                                                                                                                                                                                                                                                                                                                                                                                                  | Lay asphalt pavement.          |
| 2477 | Aug. 10          | The Washington As-<br>phalt Block and Tile<br>Co., Washington, D.C. | Tenth NE., East Capitol to C.<br>Morris NE., Sixth to Seventh.<br>Fourth SE., C to Virginia ave-<br>nue. Ninth SE., Pennsylvan-<br>ia to South Carolina ave-<br>nues. E, SE., Third to Fourth.<br>D, SE., Sixth to Seventh.<br>Fifth SE., E to G. Six-and-a-<br>half SW., D to E. Van SW.,<br>Third to Four-and-a-half.<br>Princeton and Roanoke NW.,<br>Thirteenth to Fourteenth<br>streets.                                                                   | Lay asphalt block<br>pavement. |
| 2489 | Aug. 13          | The Cranford Paving<br>Co., Washington, D.C.                        | I, New Hampshire avenue to<br>Twenty-sixth NW. C, Elev-<br>enth to Twelfth NW. Twen-<br>ty-fifth, H to K. NW. T,<br>Seventh to Florida avenue<br>NW. K, North Capitol to<br>First NW. Twenty-second,<br>F to Virginia avenue NW. F,<br>Third to Ninth NE. Fourth,<br>K to L. NE. E, Thirteenth<br>to Fifteenth SE. H, Twenty-<br>second to Twenty-third NW.<br>North Capitol, O to Q, NW.<br>Massachusetts avenue, Twen-<br>ty-second to Sheridan Circle.       | Lay asphalt pavement.          |
| 2491 | Aug. 19          | The Barber Asphalt<br>Paving Co., New<br>York.                      | Eleventh, C to D, NW. Twelfth,<br>C to D, NW. Eleventh, B to<br>C, NW. Rhode Island ave-<br>nue, New Jersey avenue to<br>Florida avenue. First, Pierce,<br>to New York avenue. Third,<br>I to K, SW. Virginia ave-<br>nue, South Capitol to Dela-<br>ware avenue. N, Four-and-a-<br>half to Sixth SW. M, Thirty-<br>first to Thirty-second, George-<br>town. M, Thirty-second to<br>Thirty-third, Georgetown.<br>Spruce and Bohrer, Larch to<br>Florida avenue. | Do.                            |

# 202 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Statement of contracts for the improvement of streets, avenues, and roads for the fiscal year 1898—Continued.*

| No.  | Date.            | Name and address of contractor.            | Location.                                                                  | Character of work.                                                                                                                                   |
|------|------------------|--------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2492 | 1897.<br>Aug. 20 | Maurice F. Talty, Washington, D. C.        | Roanoke, Irving, Princeton, Harvard, and Thirteenth streets.               | Grade, lay cobble gutters and flag crossings, and lay gravel or macadam roadway.                                                                     |
| 2493 | Aug. 21          | Gaskins & Horn, Washington, D. C.          | Twelfth street extended NE., between Florida avenue and Mount Olivet road. | Grade, remove and pile cobble, flag bricks; lay cobble gutters and flag crossings, relay cobble gutters and lay macadam roadway.                     |
|      |                  | .....do .....                              | Florida avenue NE., between M street and Brentwood road.                   | Grade, remove and pile cobble, flag bricks and curb, lay cobble gutter and flag crossing and relay same, set and reset curb and lay macadam roadway. |
| 2497 | Aug. 20          | The Cranford Paving Co., Washington, D. C. | Sidewalks in various localities..                                          | Lay cement pavements.                                                                                                                                |
| 2500 | Aug. 26          | Charles H. Eslin, Washington, D. C.        | Emporia street between Twelfth street and Brentwood road.                  | Grade, lay cobble gutters and flag crossings and lay gravel roadway.                                                                                 |
| 2502 | Sept. 3          | Lyons Bros., Washington, D. C.             | Sherman avenue between Whitney avenue and Grant street.                    | Do.                                                                                                                                                  |
| 2524 | Nov. 2           | The Cranford Paving Co., Washington, D. C. | Intersection of Columbia road and Eighteenth street.                       | Lay asphalt pavement.                                                                                                                                |
| 2525 | Nov. 16          | George B. Mullin, Washington, D. C.        | Kenesaw avenue and Park road.                                              | Grade.                                                                                                                                               |
| 2528 | Nov. 17          | James Frawley .....                        | Baltimore and Twentieth streets.                                           | Do.                                                                                                                                                  |
| 2531 | Dec. 21          | The Cranford Paving Co., Washington, D. C. | Tenth street NW., between D and F streets.                                 | Lay new asphalt pavement and resurface old pavement.                                                                                                 |

*Statement of contracts for the construction of sewers for the fiscal year 1898.*

| No.  | Date.            | Name and address of contractor.   | Location.                                                                                                                                                            | To construct—                                                                                                                                                                                                                               |
|------|------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2446 | 1897.<br>July 21 | J. K. Murphy, Washington, D. C.   | Tiber Creek and New Jersey avenue.<br>High level intercepting sewer..                                                                                                | 6,025 linear feet 14-foot by 14 foot 3 inch sewer.<br>6,145 linear feet 14 foot by 14 foot 3 inch sewer.                                                                                                                                    |
| 2515 | Oct. 1           | Andrew Gleeson, Washington, D. C. | Intersection of Sixth and M streets SE.<br>Sixth, between K and L streets SE.                                                                                        | 60 linear feet 6 foot 3 inch diameter sewer.<br>215 linear feet 4 foot 3 inch diameter sewer.                                                                                                                                               |
| 2518 | Oct. 30          | B. J. Coyle, Washington, D. C.    | W. North Capitol to First street; North Capitol, W to Baltimore street.<br>North Capitol, Baltimore to Detroit streets.<br>Meridian, between Erie and Huron streets. | 1,500 linear feet 5 foot 3 inch diameter sewer.<br>950 linear feet 5-foot diameter sewer.<br>550 linear feet 2 feet 9 inches by 4 feet 1½ inches.                                                                                           |
| 2520 | Nov. 1           | E. G. Gummel, Washington, D. C.   | Lincoln avenue, R to S streets..<br>Lincoln avenue, S to T streets..<br>L street, North Capitol to First street.<br>E SW., Four-and-a-half to Sixth street.          | 560 linear feet 2 feet 3 inches by 3 feet 4½ inches.<br>550 linear feet 2 by 3 feet.<br>720 linear feet 2 feet 3 inches by 3 feet 9 inches.<br>172 linear feet 2 feet 3 inches by 3 feet 4½ inches, and 605 linear feet 18-inch pipe sewer. |

*Statement of contracts for the construction of sewers for the fiscal year 1898—Continued.*

| No.  | Date.           | Name and address of contractor.      | Location.                                                                                             | To construct—                                                                                  |
|------|-----------------|--------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 2521 | 1897.<br>Nov. 5 | John Jacoby, Wilmington, Del.        | O NW., Twenty-fifth to Twenty-sixth street; M, Thirtieth to Thirty-second street NW.                  | 190 linear feet 4 feet diameter; 625 linear feet 24-inch pipe.                                 |
| 2522 | Nov. 3          | Adam McCandlish, Washington, D. C.   | Four-and-a-half street SW., crossing E street and between School and E streets.                       | 75 linear feet 2 feet 9 inches by 4 feet 1½ inches, and 276 linear feet 2 by 3 foot sewer.     |
| 2523 | Nov. 11         | Lyons Bros., Washington, D. C.       | Morris road, crossing Nichols avenue and east of same.                                                | 120 linear feet 2 foot 6 inch by 3 foot 9 inch and 500 linear feet 2 by 3 foot sewer.          |
| 2542 | 1898.<br>May 17 | R. M. Moore & Co., Washington, D. C. | Khingle road and private roads in Cleveland Park.                                                     | 2,100 linear feet 15-inch, 2,400 linear feet 12-inch, and 1,500 linear feet 8-inch pipe sewer. |
| 2543 | May 21          | Jones, Pollard & Co., Baltimore, Md. | Water street and across old Naval Observatory grounds, between Twenty-first and Twenty-fifth streets. | 1,500 linear feet 6 foot 6 inch diameter sewer.                                                |

*Statement of contracts for furnishing construction material for the fiscal year 1898.*

| No.  | Date.           | Name and address of contractor.                          | To furnish—                                                                         |
|------|-----------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|
| 2409 | 1897.<br>July 9 | The Washington Brick Co., Washington, D. C.              | 700,000 sewer bricks.                                                               |
| 2416 | June 30         | Johnson Hellen, Washington, D. C.                        | 25,000 cubic yards of sand and gravel.                                              |
| 2439 | July 22         | The McNeal Pipe and Foundry Co., Burlington, N. J.       | 50,000 feet of 6-inch and 10,000 feet of 4-inch water pipe.                         |
| 2444 | July 26         | Charles Ford, Washington, D. C.                          | 600,000 sidewalk paving brick.                                                      |
| 2451 | July 27         | M. J. Drummond, New York                                 | 4,000 feet 12-inch water pipe.                                                      |
| 2457 | July 27         | Camden Clay Co., Spilman, W. Va.                         | 200,000 vitrified paving blocks.                                                    |
| 2466 | July 30         | Mack Manufacturing Co., West Virginia                    | Terra-cotta material.                                                               |
| 2480 | Aug. 10         | John M. Mack, Philadelphia, Pa.                          | 500,000 vitrified paving blocks.                                                    |
| 2481 | Aug. 14         | William A. Richards, Washington, D. C.                   | 4,000 cubic yards paving sand and 4,000 cubic yards concrete sand.                  |
| 2490 | Aug. 18         | John Miller, Washington, D. C.                           | 600,000 sidewalk paving brick.                                                      |
| 2494 | Aug. 18         | Savage Fire Brick Co., Keystone Junction, Pa.            | 540,000 vitrified sewer invert bricks.                                              |
| 2498 | Aug. 25         | Washington Asphalt Block and Tile Co., Washington, D. C. | 300,000 asphalt paving blocks.                                                      |
| 2499 | Aug. 24         | John B. Lord, Washington, D. C.                          | 6,000 cubic yards screened gravel and 700 cubic yards building sand.                |
| 2501 | Aug. 12         | McMahan, Porter & Co., New Cumberland, W. Va.            | 500,000 vitrified paving blocks.                                                    |
| 2503 | Sept. 1         | Atlas Cement Co., New York                               | 3,500 barrels Portland cement.                                                      |
| 2509 | Sept. 15        | H. A. Jones & Co., Washington, D. C.                     | 6,000 barrels Class A and 18,000 barrels Class B natural cement.                    |
| 2519 | Oct. 30         | S. C. Doby, Lithonia, Ga.                                | 38,000 linear feet 6 by 20 inch and 30,000 linear feet 8 by 8 inch granite curbing. |
| 2533 | 1898.<br>Jan. 6 | Washington Asphalt Block and Tile Co., Washington, D. C. | 150,000 asphalt paving blocks.                                                      |



## 204 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Statement of construction, hauling, and miscellaneous contracts for the fiscal year 1898.

| No.  | Date.            | Name and address of contractor.                             | Description.                                                                                                                      |
|------|------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 2417 | 1897.<br>June 30 | United States Electric Lighting Co., Wash-<br>ington, D. C. | Furnish, operate, and maintain elec-<br>tric arc lamps.                                                                           |
| 2450 | July 26          | Pavarini & Greer, Washington, D. C. ....                    | Construct frame school building on<br>Connecticut avenue extended, near<br>Chevy Chase.                                           |
| 2487 | Aug. 16          | Littlefield, Alvord & Co., Washington, D. C.                | Hauling construction material.                                                                                                    |
| 2510 | Sept. 25         | James M. Dunn, Washington, D. C. ....                       | Construct engine house in Anacostia<br>for fire department.                                                                       |
| 2512 | July 1           | Daggett & Dugan, Washington, D. C. ....                     | Sprinkle, sweep, and clean carriage-<br>ways of improved streets and ave-<br>nues for two years from June 30,<br>1897.            |
| 2513 | ....do....       | ....do....                                                  | Sprinkle, sweep, and clean, by hand,<br>carriage ways of improved streets<br>and avenues.                                         |
| 2514 | ....do....       | ....do....                                                  | Sprinkle, sweep, and clean paved alley-<br>ways.                                                                                  |
| 2516 | Oct. 9           | La France Fire Engine Co., New York ....                    | Furnish fire engine.                                                                                                              |
| 2517 | Oct. 13          | American Fire Engine Co., Seneca Falls,<br>N. Y.            | Do.                                                                                                                               |
| 2526 | Nov. 16          | Andrew Gleeson and Robert T. Humphrey,<br>Washington, D. C. | Construct engine house on Eighth<br>street N.W., between D and E streets,<br>for fire department.                                 |
| 2527 | Nov. 8           | Baldwin & Peake, Washington, D. C. ....                     | Construct school building on the<br>southeast corner of First and Quincy<br>streets, N.E.                                         |
| 2529 | Nov. 26          | H. I. Gregory, Washington, D. C. ....                       | Furnish and set Smead heating and<br>ventilating apparatus in school<br>building at First and Quincy streets<br>N.E.              |
| 2534 | 1898.<br>Feb. 12 | Baldwin & Peake, Washington, D. C. ....                     | Construct school building on Sixth<br>street, between B and C streets N.E.                                                        |
| 2535 | Feb. 17          | H. I. Gregory, Washington, D. C. ....                       | Furnish and set Smead heating and<br>ventilating apparatus in school<br>building on Sixth street, between B<br>and C streets N.E. |
| 2536 | Mar. 4           | James C. McGuire, New York City .....                       | Widen the P Street Bridge over Rock<br>Creek.                                                                                     |
| 2537 | Mar. 14          | Andrew Gleeson, Washington, D. C. ....                      | Construct school building on Marshall<br>street, Mount Pleasant.                                                                  |
| 2538 | Mar. 22          | Baldwin & Peake, Washington, D. C. ....                     | Construct school building on the south-<br>east corner of Twenty-fourth and F<br>streets N.W.                                     |
| 2539 | Mar. 24          | H. I. Gregory, Washington, D. C. ....                       | Furnish and set Smead heating and<br>ventilating apparatus in school<br>building at Twenty-fourth and F<br>streets N.W.           |
| 2540 | ....do....       | ....do....                                                  | Furnish and set Smead heating and<br>ventilating apparatus in school<br>building on Marshall street, Mount<br>Pleasant.           |
| 2541 | Apr. 16          | Pavarini & Greer .....                                      | Construct building for Industrial Home<br>School.                                                                                 |
| 2544 | May 23           | Eugene M. Tilden, Washington, D. C. ....                    | Furnish dog tags.                                                                                                                 |
| 2545 | May 24           | Pavarini & Greer, Washington, D. C. ....                    | Construct wagon shed and brick wall<br>and reconstruct stable in square 175.                                                      |

Statement of contracts for general supplies for the fiscal year 1898.

| No.  | Date.            | Name and address of contractor.             | To furnish—      |
|------|------------------|---------------------------------------------|------------------|
| 2410 | 1897.<br>July 12 | H. I. Gregory, Washington, D. C. ....       | Tinware.         |
| 2411 | July 15          | H. P. Pillsbury, Washington, D. C. ....     | Forage.          |
| 2412 | July 14          | Wm. Hahn & Co., Washington, D. C. ....      | Boots and shoes. |
| 2414 | July 16          | Riley & Walker, Washington, D. C. ....      | Lumber.          |
| 2415 | July 17          | C. G. Stott & Co., Washington, D. C. ....   | Stationery.      |
| 2418 | July 19          | F. F. May & Co., Washington, D. C. ....     | Tinware.         |
| 2419 | ....do....       | ....do....                                  | Saddlery.        |
| 2420 | ....do....       | ....do....                                  | Hardware.        |
| 2421 | July 20          | Conrad Becker, Washington, D. C. ....       | Saddlery.        |
| 2422 | ....do....       | Dunlap Printing Co., Philadelphia, Pa. .... | Blank forms.     |
| 2423 | July 17          | Richard & Co., Washington, D. C. ....       | Groceries.       |
| 2424 | July 20          | Lansburgh & Bro., Washington, D. C. ....    | Dry goods.       |
| 2425 | July 19          | F. A. Schmidt, Washington, D. C. ....       | Stationery.      |
| 2426 | July 21          | S. R. Waters, Washington, D. C. ....        | Groceries.       |

Statement of contracts for general supplies for the fiscal year 1898—Continued.

| No.  | Date.    | Name and address of contractor.                 | To furnish—                       |
|------|----------|-------------------------------------------------|-----------------------------------|
|      | 1897.    |                                                 |                                   |
| 2427 | July 19  | T. T. Keane, Washington, D. C.                  | Fresh beef.                       |
| 2428 | July 17  | Easton & Rupp, Washington, D. C.                | Stationery.                       |
| 2429 | July 20  | Lausburch & Bro., Washington, D. C.             | Saddlery.                         |
| 2430 | July 22  | Mortimer Du Perow, Washington, D. C.            | Telegraph and telephone supplies. |
| 2431 | July 23  | T. Somerville & Sons, Washington, D. C.         | Plumbers' material.               |
| 2432 | July 21  | Charles Werner, Washington, D. C.               | Fuel.                             |
| 2433 | July 22  | B. Rich & Sons, Washington, D. C.               | Dry goods.                        |
| 2434 | do       | do                                              | Boots and shoes.                  |
| 2435 | July 19  | W. J. C. Dulany, Baltimore, Md.                 | Hardware.                         |
| 2436 | do       | do                                              | Schoolbooks.                      |
| 2437 | do       | do                                              | Stationery.                       |
| 2438 | do       | do                                              | Fuel.                             |
| 2439 | July 21  | John Kennedy, Washington, D. C.                 | Dry goods.                        |
| 2440 | July 21  | L. P. Clarke, Washington, D. C.                 | Saddlery.                         |
| 2441 | July 24  | Lutz & Co., Washington, D. C.                   | Hardware.                         |
| 2442 | July 19  | J. B. Lambie, Washington, D. C.                 | Fuel.                             |
| 2443 | July 24  | V. Baldwin Johnson, Washington, D. C.           | Miscellaneous castings.           |
| 2444 | do       | J. T. Springman & Bro., Washington, D. C.       | Schoolbooks.                      |
| 2447 | July 20  | R. C. Ballantyne, Washington, D. C.             | Stationery.                       |
| 2448 | do       | do                                              | Drugs.                            |
| 2449 | July 24  | Edward Stevens, Washington, D. C.               | Oil.                              |
| 2452 | do       | Standard Oil Co., New Jersey.                   | Dry goods.                        |
| 2453 | July 21  | John Wanamaker, Philadelphia, Pa.               | Drugs.                            |
| 2454 | July 26  | T. A. Tschiffely, jr., Washington, D. C.        | Plumbers' material.               |
| 2455 | do       | Mitchell & Reed, Washington, D. C.              | Stationery.                       |
| 2456 | July 21  | J. R. Buckalew, Washington, D. C.               | Lumber.                           |
| 2458 | July 26  | T. W. Smith, Washington, D. C.                  | Hardware.                         |
| 2459 | do       | M. W. Beveridge, Washington, D. C.              | Fresh beef.                       |
| 2460 | July 22  | Hyman Powdermaker, Washington, D. C.            | Stationery.                       |
| 2461 | do       | Chas. S. Braisted, New York City                | Glass, paints, and varnish.       |
| 2462 | do       | Mackall Bros. & Flemer, Washington, D. C.       | Drugs.                            |
| 2463 | do       | do                                              | Printing.                         |
| 2464 | July 30  | Hartman & Cadick, Washington, D. C.             | Glass, paints, and varnish.       |
| 2465 | July 21  | Hugh Reilly, Washington, D. C.                  | Groceries.                        |
| 2467 | July 29  | John B. Daish, Washington, D. C.                | Lumber.                           |
| 2468 | July 30  | W. T. Galliher & Bro., Washington, D. C.        | Fresh beef.                       |
| 2469 | Aug. 2   | Anton Lully, Washington, D. C.                  | Lumber.                           |
| 2470 | July 28  | Church & Stephenson, Washington, D. C.          | Forage.                           |
| 2471 | July 29  | John B. Daish, Washington, D. C.                | Drugs.                            |
| 2472 | July 30  | G. F. Muth & Co., Washington, D. C.             | Glass, paints, and varnish.       |
| 2473 | do       | do                                              | Groceries.                        |
| 2474 | Aug. 4   | Frank Hume, Washington, D. C.                   | Hardware.                         |
| 2475 | July 1   | Jordan & Christie, Boston, Mass.                | Groceries.                        |
| 2476 | Aug. 9   | James E. Stake, Washington, D. C.               | Do.                               |
| 2478 | July 28  | J. C. Ergood & Co., Washington, D. C.           | Meat.                             |
| 2479 | Aug. 13  | Charles E. Lyman, Washington, D. C.             | Furniture.                        |
| 2482 | July 30  | Blum Bros., Washington, D. C.                   | Tinware.                          |
| 2483 | do       | do                                              | Hardware.                         |
| 2484 | do       | do                                              | Groceries.                        |
| 2485 | do       | do                                              | Lumber.                           |
| 2486 | do       | do                                              | Forage.                           |
| 2488 | July 24  | G. A. Shehan, Washington, D. C.                 | Groceries.                        |
| 2495 | Aug. 20  | W. M. Galt & Co., Washington, D. C.             | Furniture.                        |
| 2496 | do       | do                                              | Blank forms.                      |
| 2504 | Sept. 13 | W. B. Moses & Sons, Washington, D. C.           | Hardware.                         |
| 2505 | July 26  | Metropolitan Job Printing Office, New York City | Telegraph and telephone supplies. |
| 2506 | July 24  | W. A. Pate, Washington, D. C.                   | Saddlery.                         |
| 2507 | do       | do                                              | Fuel.                             |
| 2508 | do       | do                                              | Ice.                              |
| 2511 | July 25  | Johnson Bros., Washington, D. C.                | Groceries.                        |
| 2530 | Nov. 9   | Great Falls Ice Co., Washington, D. C.          |                                   |
| 2532 | Dec. 7   | Austin Nichols & Co., Washington, D. C.         |                                   |

Proposals for paving Columbia road between Florida avenue and Eighteenth street with sheet asphalt, opened July 10, 1897.

| Bidder.                             | Asphalt pavement. | Vitrified-block gutter. | Total cost. |
|-------------------------------------|-------------------|-------------------------|-------------|
| Cranford Paving Co.                 | \$1.70            | \$1.40                  | \$17,460.00 |
| Barber Asphalt Paving Co.           | 1.80              | 1.40                    | 18,380.00   |
| Eastern Bermudez Asphalt Paving Co. | 1.78              | 1.30                    | 18,068.00   |
| Southern Asphalt Paving Co.         | 1.77              | 2.25                    | 19,209.00   |

# 206 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Proposals for paving intersection of Columbia road and Eighteenth street extended, opened October 21, 1897.*

| Bidder.                        | Asphalt pavement on 6-inch hydraulic base. | Vitrified-brick gutter. |
|--------------------------------|--------------------------------------------|-------------------------|
| Cranford Paving Co .....       | \$1. 70                                    | \$1. 40                 |
| Barber Asphalt Paving Co ..... | 1. 80                                      | 1. 40                   |

*Proposals for grading Baltimore and Twentieth streets and Kenesaw avenue and Park road, opened at 12 o'clock noon, November 10, 1897.*

| Bidder.                   | Baltimore and Twentieth streets. | Kenesaw avenue and Park road. |
|---------------------------|----------------------------------|-------------------------------|
|                           | <i>Cubic yard.</i>               | <i>Cubic yard.</i>            |
| William H. H. Allen ..... | \$0. 20                          | \$0. 17½                      |
| George B. Mullen .....    |                                  | . 14½                         |
| M. P. Quinn .....         | . 43                             | . 37                          |
| Ezra A. Mathers .....     | . 23. 9                          | . 21. 6                       |
| Andrew Gleason .....      | . 20                             | . 15                          |
| James Frawley .....       | . 17½                            | . 21½                         |
| M. F. Talty .....         | . 20                             | . 15½                         |

*Proposals for widening and repaving Tenth street NW., from D to F, opened November 20, 1897.*

| Bidder.                     | Asphalt paving, 2,200 square yards. |             | Block gutters, 440 square yards. |           | Resurfacing 1,600 square yards. |             | Total.      |
|-----------------------------|-------------------------------------|-------------|----------------------------------|-----------|---------------------------------|-------------|-------------|
|                             | Price.                              | Amount.     | Price.                           | Amount.   | Price.                          | Amount.     |             |
| Cranford Paving Co.....     | \$1. 75                             | \$3,850. 00 | \$1. 40                          | \$616. 00 | \$1. 45                         | \$2,320. 00 | \$6,786. 00 |
| Barber Asphalt Paving Co... | 1. 77                               | 3,894. 00   | 1. 45                            | 638. 00   | 1. 48                           | 2,368. 00   | 6,900. 00   |

*Proposals for widening P-street Bridge, opened February 3, 1898.*

| Bidder.                    | Structural steel erected, 110,000 pounds. |              | New rubble masonry, 20 cubic yards. |           | Cement sidewalks, 150 square yards. |           | Sheet-asphalt roadway, 250 square yards. |           | Iron railing erected, 350 linear feet. |           | Total amount of bid. | Time of completion from date of contract. |
|----------------------------|-------------------------------------------|--------------|-------------------------------------|-----------|-------------------------------------|-----------|------------------------------------------|-----------|----------------------------------------|-----------|----------------------|-------------------------------------------|
|                            | Per pound.                                | Amount.      | Per yard.                           | Amount.   | Per yard.                           | Amount.   | Per yard.                                | Amount.   | Per foot.                              | Amount.   |                      |                                           |
| James C. McGuire .....     | <i>Ots.</i>                               |              |                                     |           |                                     |           |                                          |           |                                        |           |                      | <i>Days.</i>                              |
| Penn Bridge Co....         | 2. 89                                     | \$3, 179. 00 | \$7. 00                             | \$140. 00 | \$2. 50                             | \$375. 00 | \$2. 40                                  | \$600. 00 | \$2. 30                                | \$805. 00 | \$5, 099. 00         | 100                                       |
| Youngstown Bridge Co. .... | 2. 80                                     | 3, 080. 00   | 9. 85                               | 197. 00   | 2. 75                               | 412. 50   | 2. 65                                    | 662. 50   | 2. 83                                  | 990. 50   | 5, 342. 50           | 90                                        |
| R. H. Hood .....           | 3. 42                                     | 3, 762. 00   | 5. 90                               | 118. 00   | 2. 50                               | 375. 00   | 2. 30                                    | 575. 00   | 2. 25                                  | 787. 50   | 5, 617. 50           | 90                                        |
| Structural Iron Co.        | 3. 80                                     | 4, 180. 00   | 8. 00                               | 160. 00   | 2. 00                               | 300. 00   | 2. 00                                    | 500. 00   | 2. 00                                  | 700. 00   | 5, 840. 00           | 90                                        |
| Benner & Opdyke.           | 4. 2                                      | 4, 620. 00   | 5. 00                               | 100. 00   | 2. 50                               | 375. 00   | 2. 30                                    | 575. 00   | 1. 90                                  | 665. 00   | 6, 335. 00           | 70                                        |
|                            | 3. 45                                     | 3, 795. 00   | 7. 75                               | 155. 00   | 2. 65                               | 397. 50   | 2. 65                                    | 662. 50   | 2. 75                                  | 962. 50   | 5, 972. 00           | 120                                       |

*Proposals for improving Baltimore street, from Columbia road to Twentieth street, and Twentieth street, from Baltimore and Cincinnati streets, opened June 11, 1898.*

| Bidder.                        | Hauling and setting 8 by 8 inch curb. | Laying vitrified-block gutters on 6-inch hydraulic base. | Laying asphalt pavement on 6-inch hydraulic base, 2-inch binder, 2½-inch surface. |
|--------------------------------|---------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------|
| Barber Asphalt Paving Co. .... | \$0.48                                | \$1.40                                                   | \$1.78                                                                            |
| Cranford Paving Co. ....       | .50                                   | 1.45                                                     | 1.45                                                                              |

*Proposals for improving South Capitol street, between H and K streets, opened June 11, 1898.*

| Bidder.                                    | Paving granite-block roadway. | Roller to be used. | Weight of roller. | Remarks.                                                                                                         |
|--------------------------------------------|-------------------------------|--------------------|-------------------|------------------------------------------------------------------------------------------------------------------|
|                                            |                               |                    | <i>Tons.</i>      |                                                                                                                  |
| W. F. Brenizer. ....                       | 0.61                          | Steam ..           | 5 and 10          | Evidence as to steam roller furnished.                                                                           |
| Andrew Gleeson. ....                       | 1.24                          | .....do ..         | 10                |                                                                                                                  |
| Cranford Paving Co. ....                   | .93                           | .....do ..         | 5 or 10           | Own specification roller.                                                                                        |
| M. F. Talty. ....                          | 1.07                          | .....do ..         | 10                |                                                                                                                  |
| Lyon Bros. ....                            | .845                          | .....do ..         | 5 and 10          | In paper 14135, E. D. state that they have made arrangements with Barber Asphalt Paving Co. to use their roller. |
| Washington Asphalt Block and Tile Co. .... | .63                           | .....do ..         | 10 or more        |                                                                                                                  |
| O'Day & Curran. ....                       | .69                           | .....do ..         | 10                |                                                                                                                  |

*Schedule of proposals for construction of sewers, opened October 23, 1897.*

| Bidder.                | Sewer A.                                   |            |                                                      |            |                                                                |            |                          |            | Total.      |
|------------------------|--------------------------------------------|------------|------------------------------------------------------|------------|----------------------------------------------------------------|------------|--------------------------|------------|-------------|
|                        | Excavation above sewer subgrade. (13,700.) |            | Brick masonry laid in national-cement mortar. (784.) |            | Vitrified-brick masonry laid in Portland-cement mortar. (197.) |            | Concrete masonry. (457.) |            |             |
|                        | Bid.                                       | Cost.      | Bid.                                                 | Cost.      | Bid.                                                           | Cost.      | Bid.                     | Cost.      |             |
| John P. Larguey .....  | \$0.70                                     | \$9,590.00 | \$8.50                                               | \$6,664.00 | \$17.00                                                        | \$3,349.00 | \$5.50                   | \$2,513.50 | \$22,116.50 |
| B. J. Sullivan .....   | .74                                        | 10,138.00  | 9.00                                                 | 7,056.00   | 20.00                                                          | 3,940.00   | 6.50                     | 2,970.50   | 24,104.50   |
| Lyons Bros .....       | .59                                        | 8,083.00   | 8.40                                                 | 6,585.60   | 16.25                                                          | 3,201.25   | 7.25                     | 3,313.25   | 21,183.10   |
| R. M. Moore & Co ..... | .49                                        | 6,713.00   | 8.33                                                 | 6,530.72   | 16.95                                                          | 3,339.15   | 4.84                     | 2,211.88   | 18,794.75   |
| Andrew Gleeson .....   | .70                                        | 9,590.00   | 8.00                                                 | 6,272.00   | 18.00                                                          | 3,546.00   | 5.25                     | 2,399.25   | 21,807.25   |
| E. A. Mathers .....    | .51                                        | 6,987.00   | 9.10                                                 | 7,134.40   | 18.35                                                          | 3,614.95   | 5.85                     | 2,673.45   | 20,409.80   |
| John Jacoby .....      | .40                                        | 5,480.00   | 8.00                                                 | 6,272.00   | 18.00                                                          | 3,546.00   | 5.00                     | 2,285.00   | 17,583.00   |
| Reich & Deehan .....   | .53                                        | 7,261.00   | 8.40                                                 | 6,585.60   | 17.25                                                          | 3,398.25   | 5.40                     | 2,467.80   | 19,712.65   |
| Adam McCandlish .....  | .95                                        | 13,015.00  | 9.00                                                 | 7,056.00   | 18.00                                                          | 3,546.00   | 5.50                     | 2,513.50   | 26,130.50   |
| E. G. Gummel .....     | .50                                        | 6,850.00   | 7.87                                                 | 6,170.08   | 16.00                                                          | 3,152.00   | 4.70                     | 2,147.90   | 18,319.98   |
| B. J. Coyle .....      | .36                                        | 4,932.00   | 8.20                                                 | 6,428.80   | 16.40                                                          | 3,230.80   | 5.20                     | 2,376.40   | 16,968.00   |

| Bidder.                | Sewer B.                                  |          |                                                      |          |                                                               |          |                         |          | Total.     |
|------------------------|-------------------------------------------|----------|------------------------------------------------------|----------|---------------------------------------------------------------|----------|-------------------------|----------|------------|
|                        | Excavation above sewer subgrade. (1,700.) |          | Brick masonry laid in national-cement mortar. (114.) |          | Vitrified-brick masonry laid in Portland-cement mortar. (21.) |          | Concrete masonry. (74.) |          |            |
|                        | Bid.                                      | Cost.    | Bid.                                                 | Cost.    | Bid.                                                          | Cost.    | Bid.                    | Cost.    |            |
| Lyons Bros .....       | \$0.50                                    | \$850.00 | \$8.40                                               | \$957.60 | \$17.00                                                       | \$357.00 | \$5.00                  | \$370.00 | \$2,534.60 |
| R. M. Moore & Co ..... | .60                                       | 1,020.00 | 8.44                                                 | 862.16   | 17.33                                                         | 363.93   | 4.97                    | 367.78   | 2,713.87   |
| Andrew Gleeson .....   | .50                                       | 850.00   | 8.00                                                 | 912.00   | 18.00                                                         | 378.00   | 5.50                    | 407.00   | 2,547.00   |
| John Jacoby .....      | .60                                       | 1,020.00 | 8.50                                                 | 969.00   | 18.00                                                         | 378.00   | 5.50                    | 407.00   | 2,774.00   |
| Reich & Deehan .....   | .50                                       | 850.00   | 8.75                                                 | 997.50   | 17.25                                                         | 362.25   | 5.40                    | 399.60   | 2,609.35   |
| Adam McCandlish .....  | .54                                       | 918.00   | 8.60                                                 | 980.40   | 15.00                                                         | 315.00   | 4.75                    | 351.50   | 2,564.90   |
| E. G. Gummel .....     | .44                                       | 748.00   | 7.76                                                 | 884.64   | 16.00                                                         | 336.00   | 4.43                    | 327.82   | 2,296.46   |

# 208 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Schedule of proposals for construction of sewers, opened October 23, 1897—Continued.*

| Bidder.                | Sewer C.                                           |          |                                                               |          |                                                                           |          |                               |          |            | Total. |
|------------------------|----------------------------------------------------|----------|---------------------------------------------------------------|----------|---------------------------------------------------------------------------|----------|-------------------------------|----------|------------|--------|
|                        | Excavation<br>above sewer<br>subgrade.<br>(1,200.) |          | Brick masonry<br>laid in national-<br>cement mortr.<br>(102.) |          | Vitrified-brick<br>masonry laid in<br>Portland-cement<br>mortar.<br>(14.) |          | Concrete<br>masonry.<br>(68.) |          |            |        |
|                        | Bid.                                               | Cost.    | Bid.                                                          | Cost.    | Bid.                                                                      | Cost.    | Bid.                          | Cost.    |            |        |
| Lyons Bros .....       | \$0.40                                             | \$480.00 | \$8.45                                                        | \$861.90 | \$16.00                                                                   | \$224.00 | \$6.00                        | \$408.00 | \$1,973.90 |        |
| R. M. Moore & Co ..... | .79                                                | 948.00   | 8.97                                                          | 914.94   | 18.84                                                                     | 265.16   | 5.97                          | 405.96   | 2,534.06   |        |
| Andrew Gleeson .....   | .60                                                | 720.00   | 8.50                                                          | 867.00   | 19.00                                                                     | 266.00   | 5.75                          | 391.00   | 2,244.00   |        |
| John Jacoby .....      | .50                                                | 600.00   | 8.25                                                          | 841.50   | 18.00                                                                     | 252.00   | 6.00                          | 408.00   | 2,101.50   |        |
| Reich & Deehan .....   | .45                                                | 540.00   | 8.40                                                          | 856.80   | 17.25                                                                     | 241.50   | 5.40                          | 367.20   | 2,005.50   |        |
| Adam McCandlish .....  | .75                                                | 900.00   | 8.70                                                          | 887.40   | 15.50                                                                     | 217.00   | 5.00                          | 340.00   | 2,314.40   |        |
| E. G. Gummel .....     | 1.00                                               | 1,200.00 | 8.50                                                          | 867.00   | 18.00                                                                     | 252.00   | 5.50                          | 374.00   | 2,693.00   |        |

| Bidder.                | Sewer D.                                     |            |                                                        |            |                                                                  |          |                             |          |            |
|------------------------|----------------------------------------------|------------|--------------------------------------------------------|------------|------------------------------------------------------------------|----------|-----------------------------|----------|------------|
|                        | Excavating above sewer subgrade.<br>(2,400.) |            | Brick masonry laid in natural cement mortar.<br>(184.) |            | Vitrified brick masonry laid in Portland cement mortar.<br>(25.) |          | Concrete masonry.<br>(122.) |          | Total.     |
|                        | Bid.                                         | Cost.      | Bid.                                                   | Cost.      | Bid.                                                             | Cost.    | Bid.                        | Cost.    |            |
| J. P. Larngey .....    | \$0.50                                       | \$1,200.00 | \$8.50                                                 | \$1,564.00 | \$17.00                                                          | \$425.00 | \$5.50                      | \$671.00 | \$3,860.00 |
| B. J. Sullivan .....   | .40                                          | 960.00     | 8.00                                                   | 1,472.00   | 15.60                                                            | 390.00   | 5.00                        | 610.00   | 3,432.00   |
| Lyons Bros .....       | .50                                          | 1,200.00   | 8.40                                                   | 1,545.60   | 17.00                                                            | 425.00   | 5.90                        | 719.80   | 3,890.40   |
| R. M. Moore & Co ..... | .57                                          | 1,368.00   | 8.27                                                   | 1,521.68   | 16.39                                                            | 409.75   | 4.74                        | 578.28   | 3,877.71   |
| Andrew Gleeson .....   | .50                                          | 1,200.00   | 8.00                                                   | 1,472.00   | 16.00                                                            | 400.00   | 4.95                        | 603.90   | 3,675.90   |
| John Jacoby .....      | .50                                          | 1,200.00   | 8.50                                                   | 1,564.00   | 18.00                                                            | 450.00   | 5.50                        | 671.00   | 3,885.00   |
| Ruch & Deehan .....    | .50                                          | 1,200.00   | 8.40                                                   | 1,545.60   | 17.25                                                            | 431.25   | 5.40                        | 658.80   | 3,835.65   |
| Adam McCandlish .....  | .48                                          | 1,152.00   | 8.35                                                   | 1,536.40   | 15.00                                                            | 375.00   | 4.75                        | 579.50   | 3,642.90   |
| E. G. Gummel .....     | .44                                          | 1,056.00   | 7.76                                                   | 1,427.84   | 16.00                                                            | 400.00   | 4.40                        | 536.80   | 3,420.64   |
| B. J. Coyle .....      | .45                                          | 1,080.00   | 8.20                                                   | 1,508.80   | 16.40                                                            | 410.00   | 5.20                        | 634.40   | 3,633.20   |

| Bidder.               | Sewer E.                                   |          |                                                       |          |                                                                 |          |                            |          | Total.     |
|-----------------------|--------------------------------------------|----------|-------------------------------------------------------|----------|-----------------------------------------------------------------|----------|----------------------------|----------|------------|
|                       | Excavating above sewer subgrade.<br>(650.) |          | Brick masonry laid in natural cement mortar.<br>(61.) |          | Vitrified brick masonry laid in Portland cement mortar.<br>(8.) |          | Concrete masonry.<br>(39.) |          |            |
|                       | Bid.                                       | Cost.    | Bid.                                                  | Cost.    | Bid.                                                            | Cost.    | Bid.                       | Cost.    |            |
| Lyons Bros.....       | \$0.65                                     | \$422.50 | \$8.75                                                | \$533.75 | \$19.00                                                         | \$152.00 | \$7.00                     | \$273.00 | \$1,381.25 |
| R. M. Moore & Co..... | .67                                        | 435.50   | 8.59                                                  | 523.99   | 16.87                                                           | 134.96   | 4.73                       | 184.47   | 1,278.92   |
| Andrew Gleeson.....   | .65                                        | 422.50   | 8.50                                                  | 518.50   | 20.00                                                           | 160.00   | 6.00                       | 234.00   | 1,335.00   |
| John Jacoby.....      | .60                                        | 390.00   | 9.00                                                  | 549.00   | 18.00                                                           | 144.00   | 6.00                       | 234.00   | 1,317.00   |
| Ruch & Deehan.....    | .65                                        | 422.50   | 8.40                                                  | 512.40   | 17.25                                                           | 138.00   | 5.40                       | 210.00   | 1,283.50   |
| Adam McCandlish.....  | .65                                        | 422.50   | 8.75                                                  | 533.75   | 15.00                                                           | 120.00   | 4.75                       | 185.25   | 1,261.50   |
| E. G. Gummel.....     | .75                                        | 487.50   | 8.00                                                  | 488.00   | 16.00                                                           | 128.00   | 4.50                       | 175.50   | 1,279.00   |

| Bidder.                | Sewer F.                                   |         |                                                       |          |                                                                  |          |                            |          |            | Total. |
|------------------------|--------------------------------------------|---------|-------------------------------------------------------|----------|------------------------------------------------------------------|----------|----------------------------|----------|------------|--------|
|                        | Excavating above sewer subgrade.<br>(175.) |         | Brick masonry laid in natural cement mortar.<br>(72.) |          | Vitrified brick masonry laid in Portland cement mortar.<br>(17.) |          | Concrete masonry.<br>(40.) |          |            |        |
|                        | Bid.                                       | Cost.   | Bid.                                                  | Cost.    | Bid.                                                             | Cost.    | Bid.                       | Cost.    |            |        |
| Lyons Bros. ....       | \$0.30                                     | \$52.50 | \$8.50                                                | \$612.00 | \$17.00                                                          | \$289.00 | \$6.00                     | \$240.00 | \$1,193.50 |        |
| R. M. Moore & Co ..... | .29                                        | 50.75   | 8.44                                                  | 607.68   | 16.37                                                            | 278.29   | 4.89                       | 195.60   | 1,132.32   |        |
| Andrew Gleeson .....   | 1.00                                       | 175.00  | 9.00                                                  | 648.00   | 21.00                                                            | 357.00   | 6.50                       | 260.00   | 1,440.00   |        |
| John Jacoby .....      | .40                                        | 70.00   | 9.00                                                  | 576.00   | 18.00                                                            | 306.00   | 4.50                       | 180.00   | 1,132.00   |        |
| Ruch & Deehan .....    | .40                                        | 70.00   | 9.50                                                  | 684.00   | 19.50                                                            | 331.50   | 6.50                       | 260.00   | 1,345.50   |        |
| Adam McCandlish .....  | .75                                        | 131.25  | 9.00                                                  | 648.00   | 16.00                                                            | 272.00   | 5.75                       | 230.00   | 1,281.25   |        |
| E. G. Gummel .....     | 1.00                                       | 175.00  | 9.00                                                  | 648.00   | 20.00                                                            | 340.00   | 6.00                       | 240.00   | 1,403.00   |        |

# OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 209

*Schedule of proposals for construction of sewers, opened October 23, 1897—Continued.*

| Bidder.               | Sewer G.                                           |          |                                                              |            |                                                                           |          |                                |          |            |
|-----------------------|----------------------------------------------------|----------|--------------------------------------------------------------|------------|---------------------------------------------------------------------------|----------|--------------------------------|----------|------------|
|                       | Excavating<br>above sewer<br>subgrade.<br>(1,630.) |          | Brick masonry<br>laid in natural<br>cement mortar.<br>(166.) |            | Vitrified brick<br>masonry laid in<br>Portland cement<br>mortar.<br>(68.) |          | Concrete<br>masonry.<br>(109.) |          | Total.     |
|                       | Bid.                                               | Cost.    | Bid.                                                         | Cost.      | Bid.                                                                      | Cost.    | Bid.                           | Cost.    |            |
| Lyons Bros .....      | \$0.60                                             | \$978.90 | \$8.50                                                       | \$1,411.00 | \$19.00                                                                   | \$532.00 | \$6.50                         | \$708.50 | \$3,629.50 |
| R. M. Moore & Co..... | .57                                                | 923.10   | 8.33                                                         | 1,382.78   | 16.73                                                                     | 468.44   | 4.74                           | 516.66   | 3,296.98   |
| Andrew Gleeson .....  | .80                                                | 1,204.00 | 9.50                                                         | 1,577.00   | 20.00                                                                     | 560.00   | 6.25                           | 681.25   | 4,122.25   |
| John Jacoby .....     | .55                                                | 896.50   | 9.00                                                         | 1,404.00   | 18.50                                                                     | 518.00   | 6.00                           | 654.00   | 3,562.50   |
| Ruch & DeChan .....   | 1.00                                               | 1,630.00 | 8.75                                                         | 1,452.50   | 17.50                                                                     | 490.00   | 5.40                           | 588.60   | 4,161.10   |
| Adam McCandlish ..... | .85                                                | 1,385.50 | 8.50                                                         | 1,411.00   | 15.00                                                                     | 420.00   | 5.00                           | 545.00   | 3,761.50   |
| E. G. Gummel .....    | .50                                                | 815.00   | 8.00                                                         | 1,328.00   | 16.00                                                                     | 448.00   | 4.60                           | 501.40   | 3,092.40   |

| Bidder.            | Sewer H.                 |          |                  |          |            | Sewer I.                 |            |                  |          |            |
|--------------------|--------------------------|----------|------------------|----------|------------|--------------------------|------------|------------------|----------|------------|
|                    | 18-inch sewer.<br>(605.) |          | Manhole.<br>(5.) |          | Total.     | 24-inch sewer.<br>(625.) |            | Manhole.<br>(4.) |          | Total.     |
|                    | Bid.                     | Cost.    | Bid.             | Cost.    |            | Bid.                     | Cost.      | Bid.             | Cost.    |            |
| John Jacoby.....   | \$1.60                   | \$968.00 | \$30.00          | \$150.00 | \$1,118.00 | \$1.90                   | \$1,187.50 | \$35.00          | \$140.00 | \$1,327.50 |
| Ruch & Deehan ..   | 2.88                     | 1,742.40 | 40.00            | 200.00   | 1,942.40   | 3.60                     | 2,250.00   | 40.00            | 160.00   | 2,410.00   |
| Adam McCandlish .. | 1.40                     | 847.00   | 25.00            | 125.00   | 1,972.00   | 2.50                     | 1,562.50   | 35.00            | 140.00   | 1,702.50   |
| E. G. Gummel....   | 1.35                     | 816.75   | 25.00            | 125.00   | 941.75     | 2.50                     | 1,562.50   | 25.00            | 125.00   | 1,687.50   |

## RECAPITULATION—AWARDS MADE AS FOLLOWS:

|                                |             |
|--------------------------------|-------------|
| R. J. Coyle, sewer A .....     | \$16,968.00 |
| E. G. Gummel, sewer B .....    | 2,296.46    |
| E. G. Gummel, sewer D .....    | 3,420.64    |
| E. G. Gummel, sewer G .....    | 3,092.40    |
| E. G. Gummel, sewer H .....    | 941.75      |
| Lyons Bros., sewer C .....     | 1,973.90    |
| Adam McCandlish, sewer E ..... | 1,261.50    |
| John Jacoby, sewer F .....     | 1,132.00    |
| John Jacoby, sewer I .....     | 1,327.50    |

*Proposals for constructing sewers in Kingle road and private roads of Cleveland Park, opened April 30, 1898.*

| Bidder.                                   | 2,100 feet 15-inch. |            | 6 manholes. |         | Total.     |
|-------------------------------------------|---------------------|------------|-------------|---------|------------|
|                                           | Price.              | Cost.      | Price.      | Cost.   |            |
| R. M. Moore & Co .....                    | \$0.59              | \$1,239.00 | \$15.00     | \$90.00 | \$1,329.00 |
| Adam McCandlish .....                     | .68                 | 1,428.00   | 18.00       | 108.00  | 1,536.00   |
| Warren F. Brenizer .....                  | .735                | 1,543.50   | 19.00       | 114.00  | 1,657.50   |
| E. G. Gummel .....                        | .77                 | 1,617.00   | 20.00       | 120.00  | 1,737.00   |
| Andrew Gleeson .....                      | .67                 | 1,407.00   | 16.00       | 96.00   | 1,503.00   |
| James A. Coyle .....                      | .84                 | 1,764.00   | 15.00       | 90.00   | 1,854.00   |
| Washington Asphalt Block and Tile Co..... | .85                 | 1,785.00   | 17.00       | 102.00  | 1,887.00   |
| John Jacoby .....                         | .85                 | 1,785.00   | 17.00       | 102.00  | 1,887.00   |
| John P. Larguey .....                     | .97                 | 2,037.00   | 16.00       | 96.00   | 2,133.00   |
| Lyons Bros .....                          | .74                 | 1,554.00   | 15.00       | 90.00   | 1,644.00   |

| Bidder.                                   | 2,400 feet 12-inch. |            | 9 manholes. |          | Total.     |
|-------------------------------------------|---------------------|------------|-------------|----------|------------|
|                                           | Price.              | Cost.      | Price.      | Cost.    |            |
| R. M. Moore & Co .....                    | \$0.55              | \$1,320.00 | \$15.00     | \$135.00 | \$1,455.00 |
| Adam McCandlish .....                     | .58                 | 1,392.00   | 18.00       | 162.00   | 1,554.00   |
| Warren F. Brenizer .....                  | .635                | 1,524.00   | 19.00       | 171.00   | 1,695.00   |
| E. G. Gummel .....                        | .62                 | 1,488.00   | 20.00       | 180.00   | 1,668.00   |
| Andrew Gleeson .....                      | .67                 | 1,608.00   | 16.00       | 144.00   | 1,752.00   |
| James A. Coyle .....                      | .70                 | 1,680.00   | 15.00       | 135.00   | 1,815.00   |
| Washington Asphalt Block and Tile Co..... | .70                 | 1,680.00   | 17.00       | 153.00   | 1,833.00   |
| John Jacoby .....                         | .75                 | 1,800.00   | 17.00       | 153.00   | 1,953.00   |
| John P. Larguey .....                     | .83                 | 1,992.00   | 16.00       | 144.00   | 2,136.00   |
| Lyons Bros .....                          | .85                 | 2,040.00   | 15.00       | 135.00   | 2,175.00   |

# 210 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Proposals for constructing sewers in Klinge road and private roads of Cleveland Park, opened April 30, 1898—Continued.*

| Bidder.                                    | 1,500 feet 8 inch. |          | 4 manholes. |         | Total.   |
|--------------------------------------------|--------------------|----------|-------------|---------|----------|
|                                            | Price.             | Cost.    | Price.      | Cost.   |          |
| R. M. Moore & Co .....                     | \$0.47             | \$705.00 | \$15.00     | \$60.00 | \$765.00 |
| Adam McCandlish .....                      | .54                | 810.00   | 18.00       | 72.00   | 882.00   |
| Warren F. Brenizer .....                   | .54                | 810.00   | 19.00       | 76.00   | 886.00   |
| E. G. Gummel .....                         | .56                | 840.00   | 20.00       | 80.00   | 920.00   |
| Andrew Gleeson .....                       | .65                | 975.00   | 16.00       | 64.00   | 1,039.00 |
| James A. Coyle .....                       | .60                | 900.00   | 15.00       | 60.00   | 960.00   |
| Washington Asphalt Block and Tile Co ..... | .55                | 825.00   | 17.00       | 68.00   | 893.00   |
| John Jacoby .....                          | .75                | 1,125.00 | 17.00       | 68.00   | 1,193.00 |
| John P. Larguey .....                      | .83                | 1,245.00 | 16.00       | 64.00   | 1,309.00 |
| Lyons Bros .....                           | .90                | 1,350.00 | 15.00       | 60.00   | 1,410.00 |

*Proposals for constructing sewer as extension of Georgetown main sewer, opened April 30, 1898.*

| Bidder (Sewer B). | Excavation above subgrade. |          | Brick masonry in natural cement mortar. |            | Vitrified brick masonry in Portland cement mortar. |          | Concrete masonry, broken stone, and gravel. |            |
|-------------------|----------------------------|----------|-----------------------------------------|------------|----------------------------------------------------|----------|---------------------------------------------|------------|
|                   | Price.                     | Cost.    | Price.                                  | Cost.      | Price.                                             | Cost.    | Price.                                      | Cost.      |
| John Jacoby ..... | \$2.00                     | \$900.00 | \$10.00                                 | \$1,100.00 | \$30.00                                            | \$840.00 | \$5.00                                      | \$1,000.00 |

| Bidder (Sewer B). | Rubble masonry. |         | Piling. |          | Lumber in place and secured for caps. |         | B. S. coping. |        | Total.     |
|-------------------|-----------------|---------|---------|----------|---------------------------------------|---------|---------------|--------|------------|
|                   | Price.          | Cost.   | Price.  | Cost.    | Price.                                | Cost.   | Price.        | Cost.  |            |
| John Jacoby ..... | \$5.00          | \$75.00 | \$0.40  | \$160.00 | \$25.00                               | \$62.50 | \$0.40        | \$0.60 | \$4,147.10 |

Bid of John Jacoby rejected, and sewer will be readvertised.

*Proposals for constructing sewer in line of Water street across Observatory Grounds, opened April 30, 1898.*

| Bidder (Sewer A).         | Excavation above subgrade. |            | Rock excavation. |             | Brick masonry in natural cement mortar. |            |
|---------------------------|----------------------------|------------|------------------|-------------|-----------------------------------------|------------|
|                           | Price.                     | Cost.      | Price.           | Cost.       | Price.                                  | Cost.      |
| Jones, Pollard & Co ..... | \$0.40                     | \$3,680.00 | \$1.75           | \$14,525.00 | \$8.00                                  | \$6,800.00 |
| John Jacoby .....         | .50                        | 4,600.00   | 2.25             | 18,675.00   | 8.50                                    | 7,225.00   |
| Lyons Bros .....          | 1.00                       | 9,200.00   | 5.00             | 41,500.00   | 9.50                                    | 8,075.00   |

| Bidder (Sewer A).         | Concrete masonry, broken stone, and gravel. |            | Concrete masonry, gravel. |            | Vitrified brick masonry in Portland cement mortar. |            | Total.      |
|---------------------------|---------------------------------------------|------------|---------------------------|------------|----------------------------------------------------|------------|-------------|
|                           | Price.                                      | Cost.      | Price.                    | Cost.      | Price.                                             | Cost.      |             |
| Jones, Pollard & Co ..... | \$5.00                                      | \$2,000.00 | \$5.00                    | \$2,000.00 | \$17.00                                            | \$2,550.00 | \$29,555.00 |
| John Jacoby .....         | 4.25                                        | 1,700.00   | 4.25                      | 1,700.00   | 18.00                                              | 2,700.00   | 34,900.00   |
| Lyons Bros .....          | 7.00                                        | 3,000.00   | 7.00                      | 2,800.00   | 18.75                                              | 2,812.50   | 64,587.50   |

*Proposals for the construction of Tiber Creek and New Jersey avenue high level intercepting sewer, opened July 10, 1897.*

| Bidder.                  | Excavation.                            |                                        | Red-brick masonry.                                                                      |                                                                                   | Vitrified brick masonry. | Concrete masonry.                                                                     |                                                                                   | Rubble-stone masonry. |
|--------------------------|----------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------|
|                          | Sewer A,<br>179,300<br>cubic<br>yards. | Sewer B,<br>188,300<br>cubic<br>yards. | Rubble-masonry section,<br>A, 10,325<br>cubic<br>yards; B,<br>10,528<br>cubic<br>yards. | Concrete section,<br>A, 12,149<br>cubic<br>yards; B,<br>12,388<br>cubic<br>yards. |                          | Rubble-masonry section,<br>A, 5,667<br>cubic<br>yards; B,<br>5,779<br>cubic<br>yards. | Concrete section,<br>A, 13,776<br>cubic<br>yards; B,<br>14,050<br>cubic<br>yards. |                       |
| J. K. Murphy .....       | \$0.52                                 | \$0.52                                 | \$8.40                                                                                  | \$8.40                                                                            | \$16.90                  | \$4.56                                                                                | \$4.56                                                                            | \$6.00                |
| Jones, Pollard & Co..... | .57                                    | .59                                    | 8.16                                                                                    | 8.16                                                                              | 17.00                    | 4.72                                                                                  | 4.72                                                                              | 5.40                  |
| Moore, Little & Co.....  | .59                                    | .59                                    | 8.33                                                                                    | 8.33                                                                              | 15.49                    | 4.73                                                                                  | 4.73                                                                              | 4.99                  |
| John Jacoby.....         | .55                                    | .55                                    | 8.00                                                                                    | 8.00                                                                              | 19.00                    | 5.00                                                                                  | 5.00                                                                              | 6.00                  |
| The Cranford Paving Co.  | .65                                    | .65                                    | 7.60                                                                                    | 7.60                                                                              | 17.00                    | 5.60                                                                                  | 5.60                                                                              | 8.00                  |
| Talty & Gummel.....      | .70                                    | .70                                    | 9.07                                                                                    | 9.07                                                                              | 17.53                    | 5.43                                                                                  | 5.43                                                                              | 7.00                  |
| B. J. Coyle.....         | .70                                    | .72                                    | 9.00                                                                                    | 9.00                                                                              | 21.00                    | 5.70                                                                                  | 5.70                                                                              | 6.60                  |
| Andrew Gleeson.....      | .75                                    | .75                                    | 8.50                                                                                    | 8.50                                                                              | 19.00                    | 5.20                                                                                  | 5.20                                                                              | 6.00                  |
| Shipman & Delaney a....  | 1.00                                   | 1.00                                   | 7.50                                                                                    | 7.50                                                                              | 18.00                    | 6.50                                                                                  | 6.50                                                                              | 7.50                  |

| Bidder.                  | Total amount of bid.    |                   |                         |                   |
|--------------------------|-------------------------|-------------------|-------------------------|-------------------|
|                          | Sewer A.                |                   | Sewer B.                |                   |
|                          | Rubble-masonry section. | Concrete section. | Rubble-masonry section. | Concrete section. |
| J. K. Murphy .....       | \$287,916.32            | \$280,616.96      | \$296,439.64            | \$288,993.40      |
| Jones, Pollard & Co..... | 289,483.44              | 289,003.56        | 302,075.76              | 301,585.08        |
| Moore, Little & Co.....  | 288,797.51              | 292,781.33        | 297,719.02              | 301,780.96        |
| John Jacoby.....         | 294,456.00              | 289,995.00        | 303,272.00              | 298,721.00        |
| The Cranford Paving Co.  | 328,858.20              | 308,667.00        | 338,904.20              | 318,309.80        |
| Talty & Gummel.....      | 342,810.52              | 333,855.07        | 353,401.67              | 344,266.40        |
| B. J. Coyle.....         | 344,266.70              | 341,346.20        | 358,650.90              | 355,671.00        |
| Andrew Gleeson.....      | 336,611.90              | 334,684.70        | 347,351.80              | 345,385.00        |
| Shipman & Delaney a....  | 392,046.50              | 383,937.50        | 405,250.00              | 396,979.00        |

a Would tunnel part of Sewer B, at option of Commissioners, at same price as bid amounts to per foot.

*Proposals for repairs to concrete pavements, opened April 30, 1898.*

| Class of work.                                  | Approximate quantities. | Barber Asphalt Paving Co. |          | Cranford Paving Co. |          |
|-------------------------------------------------|-------------------------|---------------------------|----------|---------------------|----------|
|                                                 |                         | Price.                    | Cost.    | Price.              | Cost.    |
| Asphalt pavement, 6-inch base, 2½ inch asphalt. | 16,000 square yards.    | \$1.78                    | \$28,480 | \$1.69              | \$27,040 |
| Asphalt surface, 2½ inches.....                 | 18,000 square yards.    | .90                       | 16,200   | .85                 | 15,300   |
| Asphalt surface, 2 inches.....                  | 5,000 square yards.     | .80                       | 4,000    | .74                 | 3,700    |
| Asphalt surface, in cart.....                   | 50,000 cubic feet.      | .63                       | 31,500   | .52                 | 26,000   |
| Asphalt binder, in cart.....                    | 95,000 cubic feet.      | .315                      | 29,925   | .30                 | 28,500   |
| Asphalt surface, burner method.                 | 16,000 cubic feet.      | 1.00                      | 16,000   | .95                 | 15,200   |
| Total.....                                      |                         |                           | 126,105  |                     | 115,740  |



*Proposals for laying asphalt-block pavements, opened July 31, 1897.*

| Street.             | From—                     | To—                         | Washington Asphalt Block and Tile Co. |            | Maryland Pavement Co. |            |
|---------------------|---------------------------|-----------------------------|---------------------------------------|------------|-----------------------|------------|
|                     |                           |                             | Bid.                                  | Total.     | Bid.                  | Total.     |
| Tenth N.E. ....     | East Capitol .....        | C .....                     | \$1.77                                | \$7,434.00 | \$1.79                | \$7,518.00 |
| Morris N.E. ....    | Sixth .....               | Seventh .....               | 1.77                                  | 2,920.50   | 1.79                  | 2,953.50   |
| Fourth S.E. ....    | C .....                   | Virginia avenue .....       | 1.77                                  | 1,132.80   | 1.79                  | 1,145.60   |
| Ninth S.E. ....     | Pennsylvania avenue ..... | South Carolina avenue ..... | 1.77                                  | 2,124.00   | 1.79                  | 2,148.00   |
| E S.E. ....         | Third .....               | Fourth .....                | 1.77                                  | 1,593.00   | 1.79                  | 1,611.00   |
| D S.E. ....         | Sixth .....               | Seventh .....               | 1.77                                  | 2,655.00   | 1.79                  | 2,685.00   |
| Fifth S.E. ....     | E .....                   | G .....                     | 1.77                                  | 3,416.10   | 1.79                  | 3,454.70   |
| Six-and-a-half S.W. | D .....                   | E .....                     | 1.77                                  | 2,601.90   | 1.79                  | 2,631.30   |
| Van S.W. ....       | Third .....               | Four-and-a-half .....       | 1.77                                  | 3,009.00   | 1.79                  | 3,043.00   |
| Princeton N.W.      | Thirteenth .....          | Fourteenth .....            | 1.77                                  | 4,159.50   | 1.79                  | 4,206.50   |
| Roanoke .....       | do .....                  | do .....                    | 1.77                                  | 3,717.00   | 1.79                  | 3,759.00   |
| Total .....         |                           |                             | .....                                 | 34,762.80  | .....                 | 35,155.60  |

*Proposals for laying sheet-asphalt pavements, opened July 31, 1897.*

| Location.                      |                       |                       | Cranford Paving Co. |                         | Barber Asphalt Paving Co. |                         | Eastern Bermudez Co. |                         |
|--------------------------------|-----------------------|-----------------------|---------------------|-------------------------|---------------------------|-------------------------|----------------------|-------------------------|
| Street.                        | From—                 | To—                   | Asphalt.            | Vitrified brick gutter. | Asphalt.                  | Vitrified brick gutter. | Asphalt.             | Vitrified brick gutter. |
| I NW .....                     | New Hampshire avenue. | Twenty-sixth .....    | \$1.54              | \$1.28                  | \$1.56                    | \$1.27                  | \$1.70               | \$1.30                  |
| C NW .....                     | Eleventh .....        | Twelfth .....         | 1.55                | 1.28                    | 1.56                      | 1.27                    | 1.70                 | 1.30                    |
| Eleventh NW .....              | C .....               | D .....               | 1.56                | 1.28                    | 1.55                      | 1.27                    | 1.70                 | 1.30                    |
| Twelfth NW .....               | D .....               | E .....               | 1.56                | 1.28                    | 1.55                      | 1.27                    | 1.70                 | 1.30                    |
| Eleventh NW .....              | E .....               | C .....               | 1.56                | 1.28                    | 1.55                      | 1.27                    | 1.70                 | 1.30                    |
| Twenty-fifth NW .....          | B .....               | K .....               | 1.54                | 1.28                    | 1.56                      | 1.27                    | 1.70                 | 1.30                    |
| T NW .....                     | Seventh .....         | Florida avenue .....  | 1.56                | 1.28                    | 1.58                      | 1.27                    | 1.70                 | 1.30                    |
| Rhode Island avenue NW.        | New Jersey avenue.    | do .....              | 1.56                | 1.28                    | 1.54                      | 1.27                    | 1.70                 | 1.30                    |
| K NW .....                     | First .....           | North Capitol .....   | 1.55                | 1.28                    | 1.56                      | 1.27                    | 1.70                 | 1.30                    |
| First NW .....                 | Pierce .....          | New York avenue ..... | 1.56                | 1.28                    | 1.55                      | 1.27                    | 1.70                 | 1.30                    |
| Twenty-second NW.              | F .....               | Virginia avenue ..... | 1.54                | 1.28                    | 1.55                      | 1.27                    | 1.70                 | 1.30                    |
| F NE .....                     | Third .....           | Ninth .....           | 1.57                | 1.28                    | 1.58                      | 1.27                    | 1.70                 | 1.30                    |
| Fourth NE .....                | K .....               | L .....               | 1.57                | 1.28                    | 1.59                      | 1.27                    | 1.70                 | 1.30                    |
| E SE .....                     | Thirteenth .....      | Fifteenth .....       | 1.57                | 1.28                    | 1.60                      | 1.27                    | 1.70                 | 1.30                    |
| Third SW .....                 | I .....               | K .....               | 1.58                | 1.28                    | 1.56                      | 1.27                    | 1.70                 | 1.30                    |
| Virginia avenue SW.            | South Capitol .....   | Delaware avenue ..... | 1.57½               | 1.28                    | 1.56                      | 1.27                    | 1.70                 | 1.30                    |
| N SW .....                     | Four-and-a-half ..... | Sixth .....           | 1.57½               | 1.28                    | 1.56                      | 1.27                    | 1.70                 | 1.30                    |
| M (n. s.), Georgetown.         | Thirty-first .....    | Thirty-second .....   | 1.57                | 1.28                    | 1.55                      | 1.27                    | 1.70                 | 1.30                    |
| M, Georgetown .....            | Thirty-second .....   | Thirty-third .....    | 1.58                | 1.28                    | 1.57½                     | 1.27                    | 1.70                 | 1.30                    |
| H, special .....               | Twenty-second .....   | Twenty-third .....    | 1.54                | 1.28                    | 1.54½                     | 1.27                    | 1.70                 | 1.30                    |
| North Capitol, special.        | O .....               | Q .....               | 1.57                | 1.28                    | 1.58½                     | 1.27                    | 1.70                 | 1.30                    |
| Massachusetts avenue, special. | Twenty-second .....   | Sheridan Circle ..... | 1.57                | 1.28                    | 1.57½                     | 1.27                    | 1.70                 | 1.30                    |
| Spruce and Bohrer, special.    | Larch .....           | Florida avenue .....  | 1.58                | 1.28                    | 1.56½                     | 1.27                    | 1.70                 | 1.30                    |
| For all work ordered .....     |                       |                       |                     |                         |                           |                         | 1.65                 | 1.30                    |

Proposals for laying sheet-asphalt pavements, opened July 31, 1897—Continued.

| Location.                           |                         |                       | Southern Asphalt Paving Co. |                           | Fruin-Bambrick Construction Co. |                           |
|-------------------------------------|-------------------------|-----------------------|-----------------------------|---------------------------|---------------------------------|---------------------------|
| Street.                             | From—                   | To—                   | As-phalt.                   | Vitri-fied brick gut-ter. | As-phalt.                       | Vitri-fied brick gut-ter. |
| I NW .....                          | New Hampshire avenue    | Twenty-sixth .....    | \$1.79                      | \$1.50                    | \$1.72                          | \$0.96                    |
| C NW .....                          | Eleventh .....          | Twelfth .....         | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Eleventh NW .....                   | C .....                 | D .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Twelfth NW .....                    | C .....                 | D .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Eleventh NW .....                   | B .....                 | C .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Twenty-fifth NW .....               | H .....                 | K .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| T NW .....                          | Seventh .....           | Florida avenue .....  | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Rhode Island avenue NW .....        | New Jersey avenue ..... | .....do .....         | 1.79                        | 1.50                      | 1.72                            | .96                       |
| K NW .....                          | First .....             | North Capitol .....   | 1.79                        | 1.50                      | 1.72                            | .96                       |
| First NW .....                      | Pierce .....            | New York avenue ..... | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Twenty-second NW .....              | F .....                 | Virginia avenue ..... | 1.79                        | 1.50                      | 1.72                            | .96                       |
| F NE .....                          | Third .....             | Ninth .....           | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Fourth NE .....                     | K .....                 | L .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| E SE .....                          | Thirteenth .....        | Fifteenth .....       | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Third SW .....                      | I .....                 | K .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Virginia avenue SW .....            | South Capitol .....     | Delaware avenue ..... | 1.79                        | 1.50                      | 1.72                            | .96                       |
| N SW .....                          | Four-and-a-half .....   | Sixth .....           | 1.79                        | 1.50                      | 1.72                            | .96                       |
| M (n. s.), Georgetown .....         | Thirty-first .....      | Thirty-second .....   | 1.79                        | 1.50                      | 1.72                            | .96                       |
| M, Georgetown .....                 | Thirty-second .....     | Thirty-third .....    | 1.79                        | 1.50                      | 1.72                            | .96                       |
| H, special .....                    | Twenty-second .....     | Twenty-third .....    | 1.79                        | 1.50                      | 1.72                            | .96                       |
| North Capitol, special .....        | O .....                 | Q .....               | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Massachusetts avenue, special ..... | Twenty-second .....     | Sheridan Circle ..... | 1.79                        | 1.50                      | 1.72                            | .96                       |
| Spruce and Bohrer, special .....    | Larch .....             | Florida avenue .....  | 1.79                        | 1.50                      | 1.72                            | .96                       |
| For all work ordered .....          |                         |                       | 1.59                        | 1.39                      | 1.69                            | .93                       |

## Proposals for grading and macadamizing suburban streets, opened August 10, 1897.

|                                                                              | Quantity. | Andrew Gleeson. | Charles H. Eslin.    | W. H. H. Allen. | Lyons Bros.    | M. F. Talty.         | Gaskins & Horn.      | James Frawley.           |
|------------------------------------------------------------------------------|-----------|-----------------|----------------------|-----------------|----------------|----------------------|----------------------|--------------------------|
|                                                                              |           | Price. Amount.  | Price. Amount.       | Price. Amount.  | Price. Amount. | Price. Amount.       | Price. Amount.       | Price. Amount.           |
| <i>Twelfth street extended between Florida avenue and Mount Olivet road.</i> |           |                 |                      |                 |                |                      |                      |                          |
| Grading.....cubic yards.                                                     | 7,500     | 25 \$1,875.00   | Cents. 23 \$1,725.00 | Cents.          | 30 \$2,250.00  | Cents. 22 \$1,650.00 | Cents. 22 \$1,650.00 | Cents. 21 1/2 \$1,631.25 |
| Removing and piling cobble, flag, and brick.....square yards.                | 2,400     | 8 172.00        | 5 120.00             |                 | 8 172.00       | 8 172.00             | 5 120.00             | 5 120.00                 |
| Lay cobble gutters and flag crossings, square yards.                         | 2,100     | 17 357.00       | 20 420.00            |                 | 25 525.00      | 20 420.00            | 17 357.00            | 18 378.00                |
| Relay cobble gutters.....square yards.                                       | 600       | 17 102.00       | 20 120.00            |                 | 25 150.00      | 25 150.00            | 17 102.00            | 18 108.00                |
| 12-inch macadam roadway.....do.                                              | 9,500     | 90 8,550.00     | 97 9,215.00          |                 | 107 10,165.00  | 110 10,450.00        | 91 8,645.00          | 97 1/2 9,262.50          |
| Total.....                                                                   |           | 11,056.00       | 11,600.00            |                 | 13,262.00      | 12,842.00            | 10,874.00            | 11,490.75                |
| <i>Roanoke, Irving, Princeton, Harvard, and Thirteenth streets.</i>          |           |                 |                      |                 |                |                      |                      |                          |
| Grading.....cubic yards.                                                     | 8,500     | 18 1,530.00     | 22 1,870.00          |                 | 30 2,550.00    | 20 1,700.00          |                      | 28 1/2 2,443.75          |
| Lay cobble gutters and flag crossings, square yards.                         | 5,150     | 15 772.50       | 20 1,030.00          |                 | 25 1,287.50    | 20 1,030.00          |                      | 19 1,017.125             |
| 6-inch gravel roadway.....square yards.                                      | 11,200    | 30 3,360.00     | 26 2,912.00          |                 | 15 1,680.00    | 16 1,792.00          |                      | 16 1,820.00              |
| 8-inch macadam roadway.....do.                                               | 2,700     | 62 1,674.00     | 65 1,755.00          |                 | 73 1,971.00    | 68 1,856.00          |                      | 68 1,836.00              |
| Total.....                                                                   |           | 7,336.50        | 7,567.00             |                 | 7,488.50       | 6,358.00             |                      | 7,116.875                |
| <i>Sherman avenue.</i>                                                       |           |                 |                      |                 |                |                      |                      |                          |
| Grading.....cubic yards.                                                     | 5,000     | 17 850.00       | 19 950.00            | 23 1,150.00     | 30 1,500.00    | 25 1,250.00          | 21 1,050.00          | 22 1,100.00              |
| Lay cobble gutters and flag crossings, square yards.                         | 3,700     | 15 555.00       | 20 740.00            | 25 925.00       | 25 925.00      | 25 925.00            | 18 868.00            | 19 703.00                |
| 4-inch gravel roadway.....square yards.                                      | 16,000    | 24 3,840.00     | 24 3,840.00          | 18 2,880.00     | 21 1,000.00    | 20 3,200.00          | 34 5,440.00          | 33 1/2 5,640.00          |
| Total.....                                                                   |           | 5,245.00        | 5,530.00             | 4,955.00        | 4,025.00       | 5,375.00             | 7,156.00             | 7,443.00                 |
| <i>Emporia street, Twelfth street to Brentwood road.</i>                     |           |                 |                      |                 |                |                      |                      |                          |
| Grading.....cubic yards.                                                     | 5,500     | 17 935.00       | 19 1,045.00          |                 | 30 1,650.00    | 20 1,100.00          |                      |                          |
| Lay cobble gutters and flag crossings, square yards.                         | 1,750     | 17 297.50       | 20 350.00            |                 | 25 437.50      | 25 437.50            |                      |                          |
| 6-inch gravel roadway.....square yards.                                      | 5,900     | 40 2,360.00     | 22 1,298.00          |                 | 15 885.00      | 26 1,554.00          |                      |                          |
| Total.....                                                                   |           | 3,592.50        | 2,693.00             |                 | 2,972.50       | 3,071.50             |                      |                          |

Florida avenue N.E., between M street  
and Brentwood road.

|                                                                         |       |    |          |       |          |       |       |       |       |          |       |          |       |          |                  |          |
|-------------------------------------------------------------------------|-------|----|----------|-------|----------|-------|-------|-------|-------|----------|-------|----------|-------|----------|------------------|----------|
| Grading.....cubic yards..                                               | 2,000 | 20 | \$400.00 | 23    | \$400.00 | ..... | ..... | ..... | 30    | \$900.00 | 18    | \$360.00 | 16    | \$320.00 | 10 $\frac{1}{2}$ | \$320.00 |
| Removing and piling cobble, flag, brick,<br>and curb.....square yards.. | 100   | 8  | 8.00     | 2     | 2.00     | ..... | ..... | ..... | 8     | 8.00     | 8     | 8.00     | 4     | 4.00     | 5                | 5.00     |
| Lay cobble gutters and flag crossings,<br>square yards.....             | 1,610 | 16 | 257.60   | 16    | 257.60   | ..... | ..... | ..... | 25    | 402.50   | 20    | 322.00   | 17    | 273.70   | 17 $\frac{1}{2}$ | 281.75   |
| Relaying cobble gutters and flag cross-<br>ings.....square yards..      | 100   | 16 | 16.00    | 16    | 16.00    | ..... | ..... | ..... | 25    | 25.00    | 24    | 24.00    | 17    | 17.00    | 18 $\frac{1}{2}$ | 18.50    |
| Set and reset standard curb..linear feet..                              | 3,132 | 18 | 563.76   | 18    | 563.76   | ..... | ..... | ..... | 20    | 626.40   | 20    | 626.40   | 17    | 532.44   | 17 $\frac{1}{2}$ | 548.10   |
| 12-inch macadam roadway ..sq. yards..                                   | 7,070 | 85 | 6,009.50 | 92    | 6,504.40 | ..... | ..... | ..... | 107   | 7,564.90 | 90    | 6,363.00 | 86    | 6,080.20 | 87               | 6,150.90 |
| Total.....                                                              |       |    | 7,254.86 | ..... | 7,803.76 | ..... | ..... | ..... | ..... | 9,226.80 | ..... | 7,703.40 | ..... | 7,227.34 | .....            | 7,334.25 |

<sup>a</sup> See letter filed with bid, stating price intended to be 13 cents.

# 216 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

## *Proposals for laying cement sidewalks, opened August 10, 1897.*

| Bidder.                      | Per square yard. |
|------------------------------|------------------|
| Cranford Paving Co.....      | \$0.89           |
| F. M. Kemp & Sons.....       | 1.04             |
| Andrew Gleeson.....          | 1.18½            |
| Cincinnati Granitoid Co..... | 1.189            |

## *Proposals for furnishing asphalt paving blocks, opened August 19, 1897.*

| Bidder.                                                                    | Bid.    |
|----------------------------------------------------------------------------|---------|
| Washington Asphalt Block and Tile Co .....                                 | \$57.50 |
| Washington Asphalt Block and Tile Co. (West of Rock Creek, or county)..... | 59.50   |
| Maryland Pavement Co .....                                                 | 60.00   |

## *Proposal for furnishing asphalt paving blocks, opened December 30, 1897.*

| Bidder.                                   | Quantity. | Price per 1,000, east of Rock Creek and south of city boundary. | Price per 1,000, west of Rock Creek and in county. |
|-------------------------------------------|-----------|-----------------------------------------------------------------|----------------------------------------------------|
| Washington Asphalt Block and Tile Co..... | 150,000   | \$57.50                                                         | \$59.50                                            |

## *Proposals for furnishing cast-iron water pipe, opened July 9, 1897.*

| Bidder.                             | 12-inch, per ton of 2,240 pounds. | 6-inch, per ton of 2,240 pounds. | 4-inch, per ton of 2,240 pounds. | Total.      | Remarks.                                          |
|-------------------------------------|-----------------------------------|----------------------------------|----------------------------------|-------------|---------------------------------------------------|
| Howard Harrison Iron Co...          | \$18.58                           | \$18.58                          | \$19.98                          | \$16,835.40 | For the whole quantity only.                      |
| Anniston Pipe Foundry Co..          | 17.95                             | 17.95                            | 17.95                            | 16,155.00   |                                                   |
| M. J. Drummond.....                 | 17.45                             | 18.00                            | 18.50                            | 16,166.25   |                                                   |
| McNeal Pipe and Foundry Co.         | 17.90                             | 17.90                            | 17.90                            | 16,110.00   | On wharf, including unloading.                    |
| National Pipe Foundry Co...         | 19.20                             | 19.20                            | 19.20                            | 17,280.00   | On wharf; for rail delivery add 50 cents per ton. |
| Chattanooga Foundry and Pipe Works. | 19.10                             | 19.10                            | 19.10                            | 17,190.00   |                                                   |
| Camden Iron Works.....              | 18.35                             | 18.75                            | 19.25                            | 16,861.50   |                                                   |

## *Proposals for furnishing cast-iron water pipe, opened June 13, 1898.*

| Bidder.                              | 12-inch. | 6-inch. | 4-inch. | Remarks.              |
|--------------------------------------|----------|---------|---------|-----------------------|
| James B. Clark & Sons .....          | \$20.70  | \$20.70 | \$21.00 | Informal; no deposit. |
| American Pipe and Foundry Co .....   | 17.10    | 17.10   | 17.10   |                       |
| M. J. Drummond & Co .....            | 17.00    | 17.45   | 18.20   |                       |
| The McNeal Pipe and Foundry Co ..... | 18.50    | 19.00   | 19.50   |                       |

## *Proposals for furnishing sand and gravel, opened July 15, 1897.*

| Bidder.                                  | Paving sand, per cubic yard. | Concrete sand, per cubic yard. | Building sand, per cubic yard. | Gravel, per cubic yard. |
|------------------------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------|
| John B. Lord .....                       | <i>Cents.</i> 25             | <i>Cents.</i> 40               | <i>Cents.</i> 60               | 45                      |
| W. A. Richards .....                     | 22                           | 30                             | 50                             | 49                      |
| Columbia National Sand Dredging Co ..... | 29                           | 49                             | 65                             | 49                      |

Bids for furnishing natural and Portland cements, opened June 24, 1897.

| Bidder.                                  | Natural cement. |          | Portland cement. |
|------------------------------------------|-----------------|----------|------------------|
|                                          | Class A.        | Class B. |                  |
|                                          | Cents.          | Cents.   |                  |
| Henry A. Jones & Co.....                 | 24              | 22       | 1.25             |
| James H. McGill.....                     | 24              | 22       | 1.25             |
| Lawrenceville Cement Co.....             | 24              | 22       | 1.25             |
| Grove Lime and Coal Co.....              | 24              | 22       | 1.25             |
| J. G. Waters.....                        | 24              | 22       | 1.25             |
| Atlas Cement Co.....                     | 24              | 22       | 1.25             |
| Locher & Co.....                         | 24              | 22       | 1.25             |
| Kelley Island Lime and Transport Co..... | 24              | 22       | 1.25             |
| William J. Donaldson.....                | 24              | 22       | 1.25             |

Proposals for hauling, opened July 15, 1897.

| Bidder.                       | City of Washington. |                   |                          |                          |                         |                        | City of Georgetown. |                   |                          |                          |                         |                        |
|-------------------------------|---------------------|-------------------|--------------------------|--------------------------|-------------------------|------------------------|---------------------|-------------------|--------------------------|--------------------------|-------------------------|------------------------|
|                               | Sand, per yard.     | Gravel, per yard. | Paving brick, per 1,000. | Paving block, per 1,000. | 6 by 20 curb, per foot. | 8 by 8 curb, per foot. | Sand, per yard.     | Gravel, per yard. | Paving brick, per 1,000. | Paving block, per 1,000. | 6 by 20 curb, per foot. | 8 by 8 curb, per foot. |
| Littlefield, Alvord & Co..    | \$0.42              | \$0.42            | \$1.20                   | \$1.73                   | \$0.05                  | \$0.04                 | \$0.53              | \$0.53            | \$1.34                   | \$1.92                   | \$0.05                  | \$0.04                 |
| James Frawley.....            | .55                 | .66               | 1.41                     | 2.35                     | .05                     | .04                    | .75                 | 1.00              | 2.00                     | 3.10                     | .05                     | .04                    |
| Geo. W. Knox Express Co.      | .50                 | .50               | 1.25                     | 1.78                     | .05                     | .04                    | .50                 | .50               | 1.40                     | 2.00                     | .05                     | .04                    |
| Frank E. Hopkins.....         | .38                 | .45               | 1.25                     | 1.75                     | .....                   | .....                  | .50                 | .65               | 1.30                     | 2.25                     | .....                   | .....                  |
| Richard and Michael Horn..... | .415                | .50               | 1.20                     | 1.80                     | .....                   | .....                  | .53                 | .75               | 1.55                     | 2.50                     | .....                   | .....                  |

| Bidder.                       | City of Washington, east of Eastern Branch. |                   |                          |                          |                         |                        | County of Washington, between Eastern Branch and Rock Creek, not farther than 1½ miles from city limits. |                   |                          |                          |                         |                        |
|-------------------------------|---------------------------------------------|-------------------|--------------------------|--------------------------|-------------------------|------------------------|----------------------------------------------------------------------------------------------------------|-------------------|--------------------------|--------------------------|-------------------------|------------------------|
|                               | Sand, per yard.                             | Gravel, per yard. | Paving brick, per 1,000. | Paving block, per 1,000. | 6 by 20 curb, per foot. | 8 by 8 curb, per foot. | Sand, per yard.                                                                                          | Gravel, per yard. | Paving brick, per 1,000. | Paving block, per 1,000. | 6 by 20 curb, per foot. | 8 by 8 curb, per foot. |
| Littlefield, Alvord & Co..    | \$0.42                                      | \$0.42            | \$1.32                   | \$1.82                   | \$0.05                  | \$0.04                 | \$0.57                                                                                                   | \$0.57            | \$1.32                   | \$2.50                   | \$0.05                  | \$0.04                 |
| James Frawley.....            | .50                                         | 1.00              | 1.45                     | 2.10                     | .....                   | .....                  | .75                                                                                                      | 1.00              | 2.33                     | 3.17                     | .....                   | .....                  |
| Geo. W. Knox Express Co.      | .60                                         | .60               | 1.65                     | 2.20                     | .06                     | .05                    | .60                                                                                                      | .60               | 1.65                     | 2.20                     | .06                     | .05                    |
| Frank E. Hopkins.....         | .40                                         | .475              | 1.50                     | 2.00                     | .....                   | .....                  | .60                                                                                                      | .75               | 1.50                     | 2.25                     | .....                   | .....                  |
| Richard and Michael Horn..... | .45                                         | .55               | 1.55                     | 2.50                     | .....                   | .....                  | .585                                                                                                     | .74               | 1.55                     | 2.55                     | .....                   | .....                  |

| Bidder.                       | County of Washington, west of Rock Creek, and not farther than 1 mile from the limits of the city of Georgetown. |                   |                          |                          |                         |                        | Additional haul per mile or fraction thereof. |                   |                          |                          |                         |                        |
|-------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|--------------------------|-------------------------|------------------------|-----------------------------------------------|-------------------|--------------------------|--------------------------|-------------------------|------------------------|
|                               | Sand, per yard.                                                                                                  | Gravel, per yard. | Paving brick, per 1,000. | Paving block, per 1,000. | 6 by 20 curb, per foot. | 8 by 8 curb, per foot. | Sand, per yard.                               | Gravel, per yard. | Paving brick, per 1,000. | Paving block, per 1,000. | 6 by 20 curb, per foot. | 8 by 8 curb, per foot. |
| Littlefield, Alvord & Co..    | \$0.57                                                                                                           | \$0.57            | \$1.38                   | \$2.50                   | \$0.05                  | \$0.04                 | \$0.10                                        | \$0.10            | \$0.20                   | \$0.35                   | \$0.02                  | \$0.01                 |
| James Frawley.....            | .75                                                                                                              | 1.00              | 2.00                     | 3.14                     | .....                   | .....                  | .40                                           | .40               | 1.00                     | 2.00                     | .06                     | .05                    |
| Geo. W. Knox Express Co.      | .60                                                                                                              | 1.00              | 1.65                     | 2.20                     | .06                     | .05                    | .40                                           | .30               | .50                      | 1.00                     | .....                   | .....                  |
| Frank E. Hopkins.....         | .75                                                                                                              | 1.00              | 2.00                     | 2.50                     | .....                   | .....                  | .20                                           | .30               | .50                      | 1.00                     | .....                   | .....                  |
| Richard and Michael Horn..... | .825                                                                                                             | 1.15              | 2.27                     | 3.45                     | .....                   | .....                  | .50                                           | .55               | .75                      | 1.25                     | .....                   | .....                  |

a Conditional; see letter.

# 218      OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

*Proposals for constructing a frame schoolhouse on the line of Connecticut avenue extended, opened July 6, 1897.*

| Bidder.                    | Amount. |
|----------------------------|---------|
| Pavarini & Greer .....     | \$8,247 |
| C. Thomas & Son .....      | 9,999   |
| William Rothwell.....      | 10,568  |
| Richardson & Burgess ..... | 12,473  |

*Proposals for constructing an eight-room school building on west side of Sixth street, between B and C streets N.E., opened January 3, 1898.*

| Bidder.                  | Amount.  |
|--------------------------|----------|
| James Connor .....       | \$27,465 |
| Gleeson & Humphrey ..... | 28,000   |
| Pavarini & Greer .....   | 27,000   |
| J. M. Dunn .....         | 27,400   |
| Baldwin & Peake .....    | 25,400   |
| Noble H. Thomas .....    | 28,800   |

*Proposals for constructing schoolhouse on southeast corner of Twenty-fourth and F streets NW., opened February 10, 1898.*

| Bidder.                     | Amount bid for building. | Amount bid for retaining wall. | Total.      |
|-----------------------------|--------------------------|--------------------------------|-------------|
| J. M. Dunn .....            | \$25,275.00              | \$1,350.00                     | \$26,625.00 |
| Gleeson & Humphrey .....    | 26,000.00                | 1,400.00                       | 27,400.00   |
| Baldwin & Peake .....       | 23,800.00                | 1,363.10                       | 25,163.10   |
| Pavarini & Greer .....      | 24,800.00                | 1,400.00                       | 26,200.00   |
| Geo. W. Harrison & Co. .... | 25,240.00                | 1,500.00                       | 26,740.00   |

*Proposals for constructing an eight-room schoolhouse on Marshall street, Mount Pleasant, opened February 10, 1898.*

| Bidder.                     | Amount.  |
|-----------------------------|----------|
| Andrew Gleeson .....        | \$25,000 |
| Jas. L. Parsons .....       | 27,978   |
| Baldwin & Peake .....       | 27,266   |
| Pavarini & Greer .....      | 25,000   |
| J. M. Dunn .....            | 25,500   |
| Geo. W. Harrison & Co. .... | 27,147   |

*Schedule of proposals to erect school building at First and Quincy streets, opened October 15, 1897.*

| Bidder.                                     | Amount.     |
|---------------------------------------------|-------------|
| J. M. Dunn .....                            | \$28,800.00 |
| Baldwin & Peake .....                       | 27,000.00   |
| Henry F. Getz .....                         | 35,900.00   |
| W. E. Speir .....                           | 33,200.00   |
| George W. Corbett .....                     | 31,600.00   |
| R. H. Hood .....                            | 31,948.00   |
| Andrew Gleeson and Robert T. Humphrey ..... | 28,000.00   |
| Galloway & Son .....                        | 33,857.56   |
| C. Thomas & Son .....                       | 30,900.00   |

*Proposals for erecting an eight-room school building at First and Quincy streets, opened October 30, 1897.*

| Bidder.                                | Amount.  |
|----------------------------------------|----------|
| Andrew Gleeson and R. T. Humphrey..... | \$24,800 |
| J. M. Dunn.....                        | 25,206   |
| Baldwin & Peake.....                   | 24,633   |
| C. Thomas & Son.....                   | 24,711   |
| James Connor.....                      | 25,400   |
| Pavarini & Greer.....                  | 25,284   |

*Proposals for constructing an engine house in Anacostia, opened August 13, 1897.*

| Bidder.               | Proposal No. 1. | Proposal No. 2. |
|-----------------------|-----------------|-----------------|
| Justin McDonald.....  | \$18,304.00     | \$18,800.00     |
| B. P. Bond.....       | 11,742.00       | 11,742.65       |
| William Rothwell..... | 16,000.00       | 16,700.00       |
| D. F. Mockabee.....   | 15,349.00       | 15,836.00       |
| C. Thomas & Son.....  | 17,999.00       | 18,200.00       |
| Peter McCartney.....  | 16,900.00       | 17,100.00       |
| J. M. Dunn.....       | 14,300.00       | 14,800.00       |
| Connor & Cullity..... | 18,564.00       | 18,864.00       |
| Baldwin & Peake.....  | 18,397.00       | 17,017.00       |
| Pavarini & Greer..... | 13,549.00       | 14,049.00       |

*Proposals for constructing an engine house on lots 5 and 6, square 431, Eighth street, between D and E streets NE., opened November 10, 1897.*

| Bidder.                                | Proposal No. 1. | Proposal No. 2. |
|----------------------------------------|-----------------|-----------------|
| Andrew Gleeson and R. T. Humphrey..... | \$10,740        | \$10,600        |
| James Connor.....                      | 11,250          | 10,960          |
| Pavarini & Greer.....                  | 11,245          | 10,945          |
| C. Thomas & Son.....                   | 10,363          | 10,063          |

a No certificate or certified check with the bid of C. Thomas & Son.

*Proposals for constructing wagon shed and brick wall, and reconstructing stable in square 175, opened May 6, 1898.*

| Bidder.                | Amount.    |
|------------------------|------------|
| Pavarini & Greer.....  | \$3,800.00 |
| J. M. Dunn.....        | 3,977.00   |
| Baldwin & Peake.....   | 4,300.00   |
| Lane Brothers.....     | 4,385.00   |
| N. H. Thomas & Co..... | 4,512.00   |



*Proposals for hauling, opened June 26, 1898.*

|                                                                                                                                                             | Littlefield, Alvord<br>& Co. | Merchants' Parcel<br>Delivery Co. | The G. W. Knox<br>Express. | J. Fred Spring-<br>mann. | Richard Horn &<br>Son. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------|----------------------------|--------------------------|------------------------|
| <b>For deliveries in the city of Washington:</b>                                                                                                            |                              |                                   |                            |                          |                        |
| Sand (concrete and paving).....per cubic yard..                                                                                                             | \$0.40                       | \$0.41                            | \$0.48                     | .....                    | \$0.345                |
| Screened gravel.....do.....                                                                                                                                 | .40                          | .41                               | .48                        | .....                    | .44                    |
| Paving bricks.....per M..                                                                                                                                   | 1.20                         | 1.20                              | 1.29                       | .....                    | <sup>a</sup> 1.00      |
| Paving blocks.....do.....                                                                                                                                   | 1.70                         | 1.70                              | 1.90                       | .....                    | 1.43                   |
| 6 by 20 inch granite curbing.....per linear foot..                                                                                                          | .05                          | .05                               | .06                        | .....                    | .....                  |
| 8 by 8 inch granite curbing.....do.....                                                                                                                     | .04                          | .05                               | .05                        | .....                    | .....                  |
| Cast-iron water pipe, valves, special castings, etc., per<br>ton of 2240 pounds.....                                                                        | .59                          | .55                               | .59                        | \$0.75                   | .....                  |
| <b>For deliveries in the city of Georgetown:</b>                                                                                                            |                              |                                   |                            |                          |                        |
| Sand (concrete and paving).....per cubic yard..                                                                                                             | .59                          | .52                               | .58                        | .....                    | .52                    |
| Screened gravel.....do.....                                                                                                                                 | .50                          | .52                               | .58                        | .....                    | .54                    |
| Paving bricks.....per M..                                                                                                                                   | 1.34                         | 1.35                              | 1.38                       | .....                    | 1.40                   |
| Paving blocks.....do.....                                                                                                                                   | 1.92                         | 1.90                              | 2.00                       | .....                    | 1.90                   |
| 6 by 20 inch granite curbing.....per linear foot..                                                                                                          | .05                          | .05                               | .06                        | .....                    | .....                  |
| 8 by 8 inch granite curbing.....do.....                                                                                                                     | .04                          | .05                               | .05                        | .....                    | .....                  |
| Cast-iron water pipe, valves, special castings, etc., per<br>ton of 2240 pounds.....                                                                        | .79                          | .55                               | .59                        | 1.25                     | .....                  |
| <b>For deliveries in city of Washington, east of Eastern<br/>Branch:</b>                                                                                    |                              |                                   |                            |                          |                        |
| Sand (concrete and paving).....per cubic yard..                                                                                                             | .40                          | .40                               | .58                        | .....                    | .42                    |
| Screened gravel.....do.....                                                                                                                                 | .40                          | .40                               | .58                        | .....                    | .49                    |
| Paving bricks.....per M..                                                                                                                                   | 1.32                         | 1.30                              | 1.38                       | .....                    | 1.39                   |
| Paving blocks.....do.....                                                                                                                                   | 1.80                         | 1.80                              | 2.00                       | .....                    | 1.50                   |
| 6 by 20 inch granite curbing.....per linear foot..                                                                                                          | .05                          | .05                               | .06                        | .....                    | .....                  |
| 8 by 8 inch granite curbing.....do.....                                                                                                                     | .04                          | .05                               | .05                        | .....                    | .....                  |
| Cast-iron water pipe, valves, special casting, etc., per<br>ton of 2240 pounds.....                                                                         | .59                          | .55                               | .79                        | 1.25                     | .....                  |
| <b>For deliveries in county of Washington, between Eastern<br/>Branch and Rock Creek, not farther than 1½ miles from<br/>city limits:</b>                   |                              |                                   |                            |                          |                        |
| Sand (concrete and paving).....per cubic yard..                                                                                                             | .50                          | .55                               | .64                        | .....                    | .50                    |
| Screened gravel.....do.....                                                                                                                                 | .50                          | .55                               | .64                        | .....                    | .60                    |
| Paving bricks.....per M..                                                                                                                                   | 1.33                         | 1.40                              | 1.45                       | .....                    | 1.30                   |
| Paving blocks.....do.....                                                                                                                                   | 2.00                         | 2.45                              | 2.65                       | .....                    | 1.90                   |
| 6 by 20 inch granite curbing.....per linear foot..                                                                                                          | .05                          | .06                               | .06                        | .....                    | .....                  |
| 8 by 8 inch granite curbing.....do.....                                                                                                                     | .04                          | .05                               | .05                        | .....                    | .....                  |
| Cast-iron water pipe, valves, special castings, etc., per<br>ton of 2240 pounds.....                                                                        | .79                          | .66                               | .79                        | 1.25                     | .....                  |
| <b>For deliveries in the county of Washington, west of Rock<br/>Creek, not farther than 1 mile from limits of the city of<br/>Georgetown:</b>               |                              |                                   |                            |                          |                        |
| Sand (concrete and paving).....per cubic yard..                                                                                                             | .50                          | .57                               | .64                        | .....                    | .90                    |
| Screened gravel.....do.....                                                                                                                                 | .50                          | .57                               | .64                        | .....                    | .90                    |
| Paving bricks.....per M..                                                                                                                                   | 1.34                         | 1.40                              | 1.45                       | .....                    | 2.00                   |
| Paving blocks.....do.....                                                                                                                                   | 2.00                         | 2.50                              | 2.65                       | .....                    | 2.65                   |
| 6 by 20 inch granite curbing.....per linear foot..                                                                                                          | .05                          | .06                               | .06                        | .....                    | .....                  |
| 8 by 8 inch granite curbing.....do.....                                                                                                                     | .04                          | .05                               | .05                        | .....                    | .....                  |
| Cast-iron water pipe, valves, special castings, etc., per<br>ton of 2240 pounds.....                                                                        | .79                          | .66                               | .79                        | 1.25                     | .....                  |
| <b>Additional haul. For deliveries at points other than<br/>described above (to be added to price for deliveries at<br/>nearest point described above):</b> |                              |                                   |                            |                          |                        |
| Sand (concrete and paving).....per cubic yard..                                                                                                             | .10                          | .20                               | .10                        | .....                    | .30                    |
| Screened gravel.....do.....                                                                                                                                 | .10                          | .20                               | .10                        | .....                    | .55                    |
| Paving bricks.....per M..                                                                                                                                   | .20                          | .40                               | .20                        | .....                    | 1.00                   |
| Paving blocks.....do.....                                                                                                                                   | .35                          | .70                               | .35                        | .....                    | 1.25                   |
| 6 by 20 inch granite curbing.....per linear foot..                                                                                                          | .02                          | .06                               | .02                        | .....                    | .....                  |
| 8 by 8 inch granite curbing.....do.....                                                                                                                     | .01                          | .05                               | .01                        | .....                    | .....                  |
| Cast-iron water pipe, valves, special castings, etc., per<br>ton of 2,240 pounds.....                                                                       | .10                          | .10                               | .20                        | 1.25                     | .....                  |

<sup>a</sup> Vitrified brick.

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